IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF SAN FRANCISCO

LESLIE WHITELEY and LEONARD WHITELEY,

Plaintiffs,

vs. CASE NO. 303184

RAYBESTOS-MANHATTAN, INC., et al.,

Defendants.
/

DEPOSITION OF NEAL L. BENOWITZ, M.D.

November 19, 1999

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EXHIBITS

PAGE NO.

DEPOSITION EXHIBIT NO. 1 — 18
COPY OF A THREE-PAGE DOCUMENT ENTITLED "PHILIP MORRIS INCORPORATED'S FIRST RE-NOTICE OF TAKING DEPOSITION OF NEAL L. BENOWITZ, M.D. AND REQUEST FOR PRODUCTION OF DOCUMENTS (NEW TIME ONLY)"

DEPOSITION EXHIBIT NO. 2 — 19
ONE-PAGE HANDWRITTEN DOCUMENT (Original retained by the witness; Copies are attached hereto.)

DEPOSITION EXHIBIT NO. 3 — 19
EIGHT-PAGE HANDWRITTEN DOCUMENT (Original retained by the witness; Copies are attached hereto.)

DEPOSITION EXHIBIT NO. 4 — 20
THREE-PAGE HANDWRITTEN DOCUMENT (Original retained by the witness; Copies are attached hereto.)

DEPOSITION EXHIBIT NO. 5 — 26
COPIES OF RECORDS OF CANCER CENTER - MEDICAL RECORDS PERTAINING TO LESLIE J. WHITELEY

DEPOSITION EXHIBIT NO. 5A — 26
COPIES OF RECORDS OF COMMUNITY MEMORIAL HOSPITAL - BILLING RECORDS PERTAINING TO LESLIE WHITELEY

DEPOSITION EXHIBIT NO. 5-B — 26
COPIES OF RECORDS OF COMMUNITY MEMORIAL HOSPITAL - PATHOLOGY SLIDES AND BLOCKS PERTAINING TO LESLIE WHITELEY

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DEPOSITION EXHIBIT NO. 5-D — 26
COPIES OF RECORDS OF COMMUNITY MEMORIAL HOSPITAL - BILLING RECORDS PERTAINING TO LESLIE WHITELEY

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DEPOSITION EXHIBIT NO. 5-E — 26
COPIES OF RECORDS OF COMMUNITY MEMORIAL HOSPITAL - BILLING RECORDS (MARCH 1999-PRESENT) PERTAINING TO LESLIE J. WHITELEY

DEPOSITION EXHIBIT NO. 5-F 26
COPIES OF RECORDS OF COMMUNITY
MEMORIAL HOSPITAL - X-RAYS AND
REPORTS PERTAINING TO LESLIE WHITELEY

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DEPOSITION EXHIBIT NO. 5-I 27
COPIES OF RECORDS OF COMMUNITY
MEMORIAL HOSPITAL - MEDICAL
RECORDS (VOLUME II OF II) PERTAINING
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DEPOSITION EXHIBIT NO. 5-J 27
COPIES OF RECORDS OF COMMUNITY
MEMORIAL HOSPITAL PERTAINING TO
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DEPOSITION EXHIBIT NO. 5-K 27
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HOSPITAL - MEDICAL RECORDS
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COPY OF RECORDS OF DR. JAMES
HALVERSON - BILLING AND MEDICAL
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DEPOSITION EXHIBIT NO. 7 27
COPIES OF RECORDS OF VENTURA
FAMILY PRACTICE - MEDICAL AND
BILLING RECORDS (1989-PRESENT)

DEPOSITION EXHIBIT NO. 8-A 28
COPIES OF RECORDS OF VENTURA
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COMMUNITY HEALTH HOSPITAL - BILLING
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OJAI VALLEY COMMUNITY HEALTH
CENTER - MEDICAL AND BILLING

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BRUGMAN, M.D. - BILLING AND MEDICAL
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FOGEL, M.D. - BILLING RECORDS
PERTAINING TO LESLIE WHITELEY
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FOGEL, M.D. - BILLING RECORDS
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DEPOSITION EXHIBIT NO. 13-D 29
COPIES OF RECORDS OF THOMAS
FOGEL, M.D. - MEDICAL RECORDS
PERTAINING TO LESLIE WHITELEY

DEPOSITION EXHIBIT NO. 13-E 29
COPIES OF RECORDS OF THOMAS FOGEL, M.D.
- MEDICAL RECORDS (MARCH 1999-PRESENT)
PERTAINING TO LESLIE J. WHITELEY

DEPOSITION EXHIBIT NO. 14 29
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LEONARD, M.D. - MEDICAL AND BILLING

RECORDS PERTAINING TO LESLIE WHITELEY
PATRICIA CALLAHAN AND ASSOCIATES
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DEPOSITION EXHIBIT NO. 15-A 29
COPIES OF RECORDS OF ROSEMARY
McINTYRE, M.D. - MEDICAL AND
BILLING RECORDS (MARCH 1999- PRESENT)

DEPOSITION EXHIBIT NO. 15-B 29
COPIES OF RECORDS OF ROSEMARY
McINTYRE, M.D. - BILLING AND
MEDICAL RECORDS PERTAINING TO
LESLIE WHITELEY

DEPOSITION EXHIBIT NO. 16 29
COPIES OF RECORDS OF JOHN S. SEDER
M.D., INC. - X-RAYS AND REPORT
PERTAINING TO LESLIE WHITELEY

DEPOSITION EXHIBIT NO. 17 30
COPIES OF RECORDS OF UNILAB
CORP - PATHOLOGY AND CYTOLOGY
MATERIALS PERTAINING TO
LESLIE J. WHITELEY
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DEPOSITION EXHIBIT NO. 18 43
COPY OF A TWO-PAGE DOCUMENT
ENTITLED "DECLARATION OF MARTHA A.H.
BERMAN IN SUPPORT OF PLAINTIFF'S
DISCLOSURE OF EXPERT WITNESSES"

DEPOSITION EXHIBIT NO. 19 77
COPIES OF NUMEROUS DOCUMENTS
ENTITLED "TACKLING TOBACCO"
FROM DRKOOP.COM

DEPOSITION EXHIBIT NO. 20 101
COPY OF A TWO-PAGE DOCUMENT
ENTITLED "TREATING TOBACCO
ADDICTION - NICOTINE OR NO NICOTINE?"

DEPOSITION EXHIBIT NO. 21 111
TWO-PAGE LETTER DATED
OCTOBER 22, 1999

DEPOSITION EXHIBIT NO. 22 111
ONE-PAGE LETTER DATED
NOVEMBER 3, 1999
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DEPOSITION EXHIBIT NO. 23 114
COPY OF A NINE-PAGE DOCUMENT
ENTITLED "ARTERIAL NICOTINE
KINETICS DURING CIGARETTE SMOKING
AND INTRAVENOUS NICOTINE ADMINISTRATION:
IMPLICATIONS FOR ADDICTION"

DEPOSITION EXHIBIT NO. 24 136
COPY OF A MULTI-PAGE DOCUMENT
ENTITLED "WHO EXPERT COMMITTEE ON
ADDICTION-PRODUCING DRUGS"

DEPOSITION EXHIBIT NO. 25 219
COPY OF A ONE-PAGE FACSIMILE
COVERSHEET; COPY OF A SIX-PAGE
DOCUMENT ENTITLED "DECLARATION OF
DR. MARTIN J. CLINE, M.D."

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BE IT REMEMBERED THAT, pursuant to Notice of Taking Deposition, and on Friday, November 19, 1999, commencing at the hour of 3:19 p.m. of the said day, at the offices of WARTNICK, CHABER, HAROWITZ, SMITH & TIGERMAN, 101 California Street, Suite 2200, San Francisco, California, before me, LAURA AXELSEN, a Certified Shorthand Reporter, State of California, personally appeared NEAL L. BENOWITZ, M.D., a witness in the above-entitled court and cause, produced on behalf of the defendants, who, being by me first duly sworn, was then and there examined and interrogated by Attorney JEFFREY L. FURR, representing the law offices of WOMBLE, CARLYLE, SANDRIDGE & RICE, counsel for defendant R.J. Reynolds.

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FOR THE PLAINTIFFS:

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AND FLEXITALLIC INC.:

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BY: FRANK K. BERFIELD, ESQ.
100 Bush Street, 27th Floor
San Francisco, California 94104-3902

There also being present Alecia L. Moore.

The following proceedings were thereupon had, and the following testimony was thereupon given, to wit:

---oOo---

NEAL L. BENOWITZ, M.D.,
having been duly sworn, testified as follows:
EXAMINATION BY MR. FURR

MR. FURR: Q. State your name in this case, Doctor.
A. Neal Benowitz.
Q. Dr. Benowitz, my name is Jeff Furr, and I represent the R.J. Reynolds Tobacco Company. Sir, you've been deposed many times in tobacco related cases, haven't you?
A. Yes.
Q. Do you have a general understanding of how depositions are conducted?
A. Yes.
Q. If I ask you any questions you don't understand, please ask me to rephrase or repeat, and I'll be glad to. Okay?
A. I will.
Q. Let me ask you first, Dr. Benowitz, we are stating today a little bit after 3:00 o'clock to accommodate your schedule. That's fine, but how long do you have with us today, sir?
A. I can stay all night.
Q. Well, I'm hoping we won't to have do that.

MS. WHITE: I would echo that.

MR. FURR: Q. Let me begin by tendering you, Doctor, a check for $2,000, which is related to your expert -- to your deposition fees here today, and we'll talk about that a little more later.

A. Thank you.

Q. Dr. Benowitz, you understand that we are taking your deposition here today in a case in which Leslie and Leonard Whiteley have brought suit against certain tobacco manufacturers and asbestos companies, don't you, sir?

A. I do.

Q. And you understand that you've been designated as an expert witness in this case, don't you?

A. Yes.

Q. And you understand that Mrs. Whiteley has claimed her lung cancer is related to tobacco and asbestos exposure, don't you?

A. Yes.

Q. Doctor, did you see a notice of your deposition served in this case?

A. Yes.

MR. FURR: Let's mark it. I want to talk about it for the --

MS. WHITE: Let's mark it for the record.

(DEPOSITION EXHIBIT NO. 1
WAS MARKED FOR IDENTIFICATION.)

MR. FURR: Q. Dr. Benowitz, we've marked as Exhibit 1 your deposition notice. Is that correct?

A. Yes.

Q. There's a Schedule A attached to that document, which lists certain categories of records that you were asked to bring with you today to your deposition, correct?

A. Yes.

Q. Have you seen that request before today?

A. Yes.

Q. And you brought a stack looks to me like about eight, ten inches of records. Are those the records that you brought responsive to that request?

A. Yes.

Q. We will go through them in more detail later, but if you can just generally describe for us what it is your brought with you --

A. Depositions of Leslie Whiteley and her -- some family members. Medical report of Dr. Hammer. Medical records from Dr. Halverson and maybe one other doctor. I think the other thing there was -- there's a couple of articles of my own, which has a number of

references referred to that I rely on. One paper that I got from Madelyn Chaber that was on marijuana use and cancer incidence. That's about it.

Q. Okay. Have you created any records or notes or working documents of your own related to the plaintiff in this case or to this case?

A. Yes, I brought those, too.
Q. You brought those, too. May I see those?
A. And I also brought two sheets of paper that just are information regarding cigarette warnings. Sometimes I'm asked about the specific warnings, so I brought the text of the warnings.
MR. FURR: Okay. Thank you. Could would mark this as No. 2, please?
(DEPOSITION EXHIBIT NO. 2
WAS MARKED FOR IDENTIFICATION.)
MR. FURR: Q. Dr. Benowitz let me just ask you to verify that what we've marked as deposition Exhibit 2 is one of the documents you've created related to this case.
A. Yes.
Q. One-page document?
A. Yes.
(DEPOSITION EXHIBIT NO. 3
WAS MARKED FOR IDENTIFICATION.)

MR. FURR: Q. Dr. Benowitz, we've marked as your Deposition Exhibit 3 an eight-page document, which are notes that you've created relating to this case; is that correct?
A. Yes.
MR. FURR: And 4.
(DEPOSITION EXHIBIT NO. 4
WAS MARKED FOR IDENTIFICATION.)
MR. FURR: Q. And as Deposition Exhibit 4, we've marked a three-page document of notes containing notes that you created in relation to this case, correct?
A. Yes.
Q. Dr. Benowitz, have you talked with the plaintiffs' lawyers in this case about the type of testimony that you will be asked to provide in the case?
A. Yes.
Q. Okay. Could you tell me what you've been told?
A. The main part of my testimony will be to explain to the jury about the nature of tobacco addiction, of nicotine addiction, to talk about selected documents from industry documents dealing with their knowledge of issues involving nicotine and

nicotine addiction and control of nicotine levels in tobacco, and same documents basically that I testified about in prior trials and depositions, and then I would also be asked to talk about the issue of marijuana use and cancer and then any other issues which came up relevant to -- well, also the specific issues of tobacco use and addiction in Ms. Whiteley.
Q. Okay. Now, when you say you may be asked to talk about selected documents in the industry. As you sit here, can you identify those documents for us?
A. You know, I've looked at so many documents, but I think there are five or ten documents that I've testified on in the Henley case and the case in Oregon and in Engle, and those would be the same documents that I would be talking about.

Q. Okay.
A. I forgot the details of exactly which ones they are. They're all the ones that deal with addiction issues.
Q. Okay. Can you identify any of those documents that deal with R.J. Reynolds that are R.J. Reynolds documents?
MS. WHITE: Of the five to ten he's used in previous testimony?
THE WITNESS: If you had them in front of

me, then I could, but I don't recall them offhand.
MR. FURR: Q. Okay. What opinions are you prepared to offer regarding Mrs. Whiteley specifically?
A. That she was addicted or dependent on nicotine, and that it was extremely difficult for her to quit even though she wanted to do so.
Q. Any others?
A. Regarding her tobacco or in general?
Q. Well, let's start with tobacco. Any others regarding Mrs. Whiteley's tobacco use?
A. No. That's the broad scope of my opinion.
Q. Okay. And what issues are you prepared to give opinions on unrelated to tobacco with respect to Mrs. Whiteley?
A. That any contribution of marijuana to the lung cancer would have been quite small compared to tobacco.
MR. BERFIELD: I'm sorry. Did you say questionable?
THE WITNESS: Quite small compared to tobacco.
MR. FURR: Q. Are you prepared to offer any opinions on whether or not any asbestos exposure may have contributed to her lung cancer?

A. No.
Q. Doctor, have you done all the work that you need to do to finalize your opinions, or do you still have some additional you plan on -- work you plan on doing?
A. No. I think I've done everything that I need to.
Q. Have you seen all the documents that you need to see to finalize your opinions?
A. I believe so.
Q. Dr. Benowitz, have you ever performed any type of medical examination on Mrs. Whiteley?
A. No.
Q. Have you ever performed any type of examination -- mental examination on Mrs. Whiteley, be it psychiatric or psychological?
A. No.
Q. Did Mrs. Whiteley ever consult with you for assistance in stopping smoking?
A. No.
Q. Did any of Mrs. Whiteley's physicians ever consult you for assistance with respect to the cause of her cancer?
A. No.

Q. Did any of them ever consult with respect to the treatment of her cancer?
A. No.
Q. Were you ever consulted by any physician that was attempting to assist Mrs. Whiteley with smoking cessation?
A. No.
Q. Have you ever met Mrs. Whiteley?
A. No.
Q. All right. You are here in this case as a result of being asked to be here by her attorneys; is that correct?
A. Yes.
Q. Are you being compensated for your time?
A. Yes.
Q. At what rate are you being compensated at?
A. For consultation time, $400 an hour, and $500 an hour for time at deposition or trial.
Q. And as we mentioned a moment ago, Dr. Benowitz, I provided you a check for $2,000, which is designed to cover at least four hours of your deposition. Obviously, if we go longer, you'll get another check from me. Okay?
A. Yes, thank you.
MS. WHITE: Within five days, correct?
MR. FURR: Excuse me?

MS. WHITE: Within five days? That's the law.
MR. FURR: Pursuant to the rule. Everything will be done pursuant to the rule.
MS. WHITE: Excellent.
MR. FURR: You don't need to qualify that as we go today.
Q. Dr. Benowitz, have you reviewed Mrs. Whiteley's medical records?
A. Some of them.
Q. Which ones have you reviewed?
A. I can tell you briefly just looking at my notes. As I mentioned before, I looked at the report of Dr. Hammer, which summarizes her medical history. I looked at medical records of Dr. Halverson. I looked at some records of Dr. Jeffrey Leonard. I believe that is all.
Q. Could you identify for me the records from Dr. Halverson that are contained in your stack, sir?
A. There were some other records that I looked at that weren't on my list. I've got some cancer center records from Memorial Hospital in Ventura.
Q. To make it easier for all of us, maybe perhaps you can identify a specific set of records and location they come from, if you could hand them to

them to me so we can mark them. The first set, let's mark it.
(DEPOSITION EXHIBIT NO. 5
WAS MARKED FOR IDENTIFICATION.)
MR. FURR: Q. Dr. Benowitz, can you identify the records we've marked as your deposition

Exhibit 4?
A. Yes. These were records from the Cancer Center and Memorial Community Memorial Hospital in Ventura, California.
MR. FURR: Just a moment. Did we already have a 4?
MS. WHITE: We do. Should be --
MR. FURR: Q. We've now re-marked as Exhibit 5 the records from the medical center. Is that correct, sir?
A. Yes. These are actually some additional records from the same medical center to do with billing and things like that.
MR. FURR: Let's mark this as 5-A through F.
(DEPOSITION EXHIBIT NO. 5-A THROUGH 5-F WERE MARKED FOR IDENTIFICATION.)
MR. FURR: Q. Just a moment, Dr. Benowitz. We've now marked as 5-A through F the

additional records that you received from the Community Memorial Hospital; is that correct, sir?
A. Right, but here are three more from the same hospital.
(DEPOSITION EXHIBIT NOS. 5-G THROUGH 5-K WERE MARKED FOR IDENTIFICATION.)
MR. FURR: Q. Dr. Benowitz we've now marked as 5-G through 5-K the additional sets of records from the same hospital, correct, sir?
A. Yes.
Q. What other medical records do you have with you?
A. Records from James Halverson, Dr. James Halverson.
MR. FURR: Mark that as Exhibit 6 to your deposition.
(DEPOSITION EXHIBIT NO. 6 WAS MARKED FOR IDENTIFICATION.)
MR. FURR: Q. What else do you have, Doctor?
A. Ventura Family Practice.
MR. FURR: Okay. Exhibit 7 of the deposition, please.
(DEPOSITION EXHIBIT NO. 7

WAS MARKED FOR IDENTIFICATION.)
THE WITNESS: Next one is Ventura County Medical Center.
MR. FURR: Mark these exhibits 8A and 8B, please.
(DEPOSITION EXHIBIT NOS. 8-A AND 8-B WERE MARKED FOR IDENTIFICATION.)
MR. FURR: Any other documents?
THE WITNESS: Ventura Coast Imaging.
MR. FURR: As 9, please.
(DEPOSITION EXHIBIT NO. 9 WAS MARKED FOR IDENTIFICATION.)
THE WITNESS: Ventura County Radiation.
MR. FURR: Mark this 10, please.
(DEPOSITION EXHIBIT NO. 10

WAS MARKED FOR IDENTIFICATION.)
THE WITNESS: Ojai Valley Community Hospital.
MR. FURR: Mark these as 11-A, B, and C, please.
(DEPOSITION EXHIBIT NOS. 11-A THROUGH 11-C WERE MARKED FOR IDENTIFICATION.)
THE WITNESS: Dr. Thomas Brugman.
MR. FURR: Mark this as 12, please.
(DEPOSITION EXHIBIT NO. 12

WAS MARKED FOR IDENTIFICATION.)
THE WITNESS: Dr. Thomas Fogel.
MR. FURR: Mark these as 13-A, B, C, D, E, please.
(DEPOSITION EXHIBIT NOS. 13A-E WERE MARKED FOR IDENTIFICATION.)
THE WITNESS: And then a report and a supplemental report from Dr. Samuel Hammer.
MR. FURR: We don't need to mark those.
THE WITNESS: Records from Dr. Jeffrey Leonard.
MR. FURR: 14.
(DEPOSITION EXHIBIT NO. 14 WAS MARKED FOR IDENTIFICATION.)
THE WITNESS: Doctor, records from Dr. Rosemary McIntyre.
MR. FURR: 15-A and B, please.
(DEPOSITION EXHIBIT NOS. 15-A AND 15-B WERE MARKED FOR IDENTIFICATION.)
THE WITNESS: Dr. John Seder.
MR. FURR: 16 please.
(DEPOSITION EXHIBIT NO. 16 WAS MARKED FOR IDENTIFICATION.)
THE WITNESS: And the last ones are pathology/cytology reports from Unilab Corp.

MR. FURR: Mark that as 17.
(DEPOSITION EXHIBIT NO. 17 WAS MARKED FOR IDENTIFICATION.)
MR. FURR: Q. Dr. Benowitz, let me ask you a few questions about those medical records, sir. How did you obtain those?
A. They were sent to me.
Q. By who?
MS. WHITE: Lack of foundation, calls for speculation. If you know, you can answer.
MR. FURR: Q. Let me say one thing. Doctor, if you don't know the answer to any of my questions, let us know, okay, so we don't have to have that objection all day long.
MS. WHITE: I'll make it if I feel it's appropriate.
MR. FURR: Q. If you don't know the answer to a question, just let us know. Okay?
A. Well, they were attached with a cover letter from Jennifer Hitchcock of the Wartnick law firm.
Q. Okay. So you got them from plaintiffs' counsel, correct?
A. Yes.
Q. Do you know whether those are all of the

medical records related to Mrs. Whiteley?
A. No.
Q. Did you make any effort to determine whether those were all the medical records relating to Mrs. Whiteley?
A. No.
Q. Did you inquire of plaintiffs' counsel how the medical records that you were sent had been selected?
A. No.
Q. Have you reviewed the records?
A. In a very selective way.
Q. As you were reviewing the records, did you notice whether there was any redacted material that had been redacted from the records?
A. Well, no, but I recall something about redaction, but I didn't notice if they were redacted.
Q. Okay. Let me now ask you a couple of questions, Dr. Benowitz, about exhibits 2, 3, and 4, which were the notes that you've created specifically to Mrs. Whiteley.
A. Yes.
Q. What supports -- what are these notes?
A. Well, I was trying to just go through and jot down from my memory the aspects of her smoking history that were relevant to my opinions about tobacco

addiction, and that's what I reviewed. The medical records for the -- aside from just the diagnosis, the main thing that I went to the medical records was to see instances where there was counseling about or recording or smoking history and counseling about stopping smoking.
Q. That would anticipate my next question is what materials did you review in creating Exhibits 2, 3, and 4?
A. Most of the -- most material came from Leslie Whiteley's deposition. A little bit came from the families, and a smaller amount came from the medical histories.
Q. What family depositions have you reviewed sir?
A. The father's, the father; husband, Leonard Whiteley; father, Troy Whittaker; the brother; and sister Rebecca.
Q. Do you know whether there were other family depositions that had been or will be taken?
A. I don't know.
Q. Okay. Well, when you reviewed Mrs. Whiteley's deposition, Dr. Benowitz, did you find her to be a credible witness?
MS. WHITE: I'll object, first of all,

that's beyond the scope for which he's being disclosed as an expert. He's not here as an expert on the credibility of witnesses, and I would ask that he decline to answer that question on the basis that it's not his expertise nor was he asked to make such a --
MR. FURR: You're advising him not to

answer that question?
MS. WHITE: You heard what I said, Counsel.
MR. FURR: I can --
MS. WHITE: Dr. Benowitz is an expert. He can do whatever he likes, but we're not going to entertain questions along this line.
MR. FURR: Go ahead and answer the question, please, Doctor.
MS. WHITE: Do not answer that question. We're not going to entertain questions along this line.
MR. FURR: Q. Doctor, you're a professor of medicine and psychiatry at the University of San Francisco --
MR. BARRON: Jeff, she can't under law in California instruct him. I think he was going to go ahead and answer.
MR. FURR: I should ask, Doctor, are you

going to answer that question?
MS. WHITE: It's true that I cannot instruct him not to answer. However, he's here to answer questions in his capacity as a nicotine expert, and he will answer -- nicotine addiction expert. He will answer those questions only today.
MR. FURR: Q. Go ahead and answer, please, Doctor.
A. Well --
Q. You're not being instructed not to answer, Doctor, so you may go ahead.
MS. WHITE: Again, we're not entertaining those questions. We're not making him available to answer those questions.
MR. FURR: I don't know what you believe that means, but unless you're instructing the witness not to answer, I'm not here to entertain anybody. He's here to answer questions, and he needs to answer.
MS. WHITE: Counsel, if you want to call a discovery commissioner, do it. Otherwise, move along.
MR. FURR: No, I want my question --
MS. WHITE: You can take this up on a motion to compel if you like.
MR. FURR: Q. Doctor, do you intend

to answer the question?
A. I'm not sure what's going on here. Am I instructed not to answer the question?
MS. WHITE: That's -- we're not here for that. Let's continue.
MR. FURR: She's not going to clarify it for you, either, Doctor.
MR. BARRON: I want to make a statement here, Cheryl.
MS. WHITE: Certainly. Make your record.
MR. BARRON: Yeah, we have an expedited trial date, and these kinds of inappropriate suggestions to a person you don't represent I think is going to be another basis for the court being able to consider that we're entitled to a continuance in order

to get full and complete answers, and, in addition, I think you ought to be very careful about instructing someone who is not your client to not answer questions or encourage him not to answer questions.

And, finally, the fact that you have decided to disclose him as you have doesn't mean that we can't cross-examine him. Since he has looked at a deposition transcript, and he has gathered information from it upon which his opinion is based, it's a fair question to find out whether he thinks that the

information contained therein is reliable, i.e., whether the witness appeared credible.

So if you're going to continue to do that, I think you ought to do it with some degree of caution as I've outlined for you, and, Doctor, I think you really ought to be very careful and make sure that you do what you are required to do as a witness, which is to answer questions, unless you're going to take an advice of counsel not to.

MS. WHITE: Thank you. We, of course, thoroughly reject your attempt to advise us, but we appreciate your making the record. Let's move on now.

MR. FURR: Q. Doctor, when you evaluate material to determine whether you're going to rely upon it as a basis for one of your opinions, you do as an expert witness evaluate the reliability of that material, don't you, sir?

A. In general, yes.

Q. Okay. When you reviewed Mrs. Whiteley's deposition, did you find her to be a credible source of information as the basis for your opinions?

MS. WHITE: Same objection. Let's move on.

THE WITNESS: Well, may I just say I didn't read the whole deposition. I went to the index, and I

extracted the information related to her smoking history.

MR. FURR: Q. Okay.

A. And I saw nothing unusual about that.

Q. Did you review her testimony on any issue other than her smoking history?

A. No.

Q. Well, what is your understanding of Mrs. Whiteley's smoking history?

A. Do you have my notes?

Q. We have 2, 3, and 4

MR. STILL: Sure.

THE WITNESS: In brief, she's now 40 years old. She started smoking at age 13. She smoked for 26 years until 1998. She started with Marlboro cigarettes. She was smoking somewhere between five and ten cigarettes per day by age 14 or 15. By the time she graduated high school at about age 16, she was smoking half a pack per day, which shortly thereafter increased to a pack a day.

Sometime in 1980's, I think she switched to Camel Lights and increased her smoking up to a pack to a pack and a half a day. She tried to quit in 1989, went for a couple weeks, described that as being shear

hell. She described symptoms of dizziness, inability

to concentrate, could not think, irritated, agitated, craved cigarettes, and relapsed to smoking in about two weeks.

In 1998 she successfully quit in the context of severe bronchitis, which was causing her tremendous pain when she coughed, and smoking would aggravate that. She also experienced withdrawal symptoms, but those were less severe than the pain with the bronchitis.

When she was smoking, she smoked cigarettes all day long. She smoked her first cigarette as soon as she woke up in the morning. She continued to smoke when she was sick with a cold or flu. She smoked through pregnancy all the way to the hospital, and last two years of her life, she smoked a pack and a half to two packs per day. And she was counseled by her family doctor, Dr. Halverson, to quit in 1996. Those are the salient points of her history.

MR. FURR: Q. One of the ways people sometimes describe an individual's smoking history is at least to quantify it is in terms of pack years; is that correct?

A. Yes.

Q. Did you attempt to quantify her smoking history that way?

A. I didn't. I think others have estimated at about 25, 26 pack years.

Q. Okay. You said that was Dr. Halverson who advised her to stop smoking in 1996?

A. Yes.

Q. And is that something you observed in the medical records from Dr. Halverson?

A. Yes. There's a record on December 4th, 1996 when she was being seen for tachycardia, arrhythmia, she was smoking at that time was half a pack per day, and he instructed her to avoid stimulants and stop smoking. He then records a history in June of that year of smoking one pack per day for 22 years.

Q. To your knowledge, did she make any efforts to stop smoking based upon the advice of Dr. Halverson?

A. Not to my knowledge, not in 1996.

Q. Did you review her deposition -- I should say the testimony in her testimony -- with respect to her awareness of the health risk of smoking?

A. Yes.

Q. Did you find her testimony on that topic to be credible?

MS. WHITE: Again, same objection.

THE WITNESS: Well, she was very articulate

about what was going on. She stated that she saw the warnings. She thought that these warnings were government telling people what to do. She said she took reassurance from the information from the tobacco industry and from advertisements that they could not be as bad as the government said. I think that's a

quick summary of what she said.
MR. FURR: Q. Did you find that to be credible testimony?
MS. WHITE: Again, same objections. Move along.
THE WITNESS: I think she was very articulate about these things.
MR. FURR: Q. I agree. She does appear to be articulate, doesn't she?
A. Yes.
Q. Did you form any general opinions about her level of intelligence?
A. She seemed to be pretty intelligent.
Q. And did you find her testimony regarding her level of awareness of the health risk of smoking to be credible for an intelligent, articulate woman?
A. I don't really have any judgment about that. She certainly saw that there were warnings. She interpreted some of the warnings in interesting ways,

like, for example, a warning about having a small baby when she was concerned about having a baby that was too big. She interpreted that as being a salutory effect. I didn't see a problem with her testimony.
Q. Don't you find her testimony about her interpretation of the warnings regarding the risk of delivering a child of low birth weight from smoking to be incredible?
MS. WHITE: I'm sorry. I didn't hear the question.
MR. FURR: To be incredible.
MS. WHITE: To be incredible?
MR. FURR: Yes.
MS. WHITE: Okay. If you can understand that question, go ahead and answer it.
MR. FURR: He knows not to answer any questions he doesn't understand.
MS. WHITE: My objection stands. It's vague, ambiguous. Who knows what he means, but if you know, go ahead.
THE WITNESS: I assume that she stated what she thought.
MR. FURR: Q. Okay. When you reviewed the medical records that you received from plaintiffs' counsel, what issues did you review those

records relative to?
A. Again, just the smoking. I did not review it with respect to the cancer or the therapy of the cancer.
Q. Okay.
A. I was just looking specifically at information regarding smoking.
Q. Did you review those records for information regarding Mrs. Whiteley's use of alcohol?
A. Not specifically. I noted that there was history of alcohol use.
Q. Did you review those records or note the history of illicit drug use by Mrs. Whiteley?
A. I don't know if -- well, certainly marijuana use, I think there was some notes in here about that

that her family was asked about that. There were some notes about a history of alcohol abuse and multiple drug use until age 28 by Dr. Leonard, oncology consultant, has a note of use of marijuana for 10 years that stopped many years ago. Husband said he saw her smoke marijuana twice and that they drank together.

Sister was asked about intravenous drug abuse and said that she didn't think her sister would use intravenous drugs. I guess there was some concern,

though, about a second hundred being a drug user and whether she would have used drugs or not. There were several conversations with different family members about alcohol abuse.

Q. We'll come back and talk about her alcohol and drug use and your understanding of those issues in more detail later, but let me just ask you first in addition to your review of the medical records provided by plaintiffs' counsel, has plaintiffs' counsel provided to you any information about either Mrs. Whiteley's alcohol use or illicit drug use?

A. No.

MR. FURR: Let's mark this, please.

(DEPOSITION EXHIBIT NO. 18
WAS MARKED FOR IDENTIFICATION.)

MR. FURR: Q. Dr. Benowitz we're marking as Exhibit 18 a copy of the expert disclosure you were provided in this case for your testimony. Have you seen that before, sir?

A. Yes, I think so.

Q. Okay. Did you assist plaintiffs' counsel in drafting that disclosure?

A. Well, I think that this is very similar to my disclosure from the last case, and it's straightforward.

Q. Okay. Let me just ask you a couple of questions about topics that you are identified as a witness on in this disclosure. One of these topics is quote, calculate manipulation of cigarette design to start, promote, and continue habitual use by consumers, end quote. Do you see that, sir?

A. Yes.

Q. Could you tell us what opinions or evidence you are prepared to offer in that regard?

A. Well, issues of cigarette design are primarily related to nicotine. So these documents that discuss the critical nature of nicotine and cigarettes, that there is a critical amount of nicotine that has to be in cigarettes for people to smoke cigarettes, factors that influence, impact, whole ammonia impact question, but the main issue really has to do with nicotine, the fact that industry documents make it very clear that the industry understood that nicotine is critical to smoking and understood that smokers need to get a particular level of nicotine to keep on smoking.

Q. What design attribute of cigarettes have the cigarette manufacturers manipulated in a calculated fashion to start people smoking?

A. To start people smoking?
Q. Yes, sir.
A. I don't have any opinions about design factors that make people start smoking. People start smoking usually for non-product related reasons.
Q. Why do people start smoking?
A. Mostly because of influence of peers. Almost all kids -- almost all smokers when they started start smoking as kids, and they start smoking with friends, the milieu of smoking as being understood as adult behavior, you know, sign of independence, sign of rebelliousness, bunch of different reasons, but not -- they don't start smoking because of nicotine.
Q. Are there reasons that are particularly important to why teen-age girls start smoking?
A. Well, you know, it's peer issues, also questions about weight control, especially in women. Smoking is well known to be a way to manage weight. Advertising, especially some campaigns like Virginia Slims show very slim women. You know, girls know that very well. That's another factor that's particularly relevant for girl smoking.
Q. Okay. Let's go back to the disclosure, and let me ask you what attribute of cigarette design it is that the manufacturers have manipulated in a calculated fashion to promote habitual use by

consumers?
A. Again, it really is the regulation of nicotine content, and then things such as low yield cigarettes, which were developed as a way to appear to be responsive to public health concerns as a way to reassure smokers that there's something they can do that might be less hazardous to their health, but knowing at the same time that there's compensation, that there's a significant reduction of exposure for most cigarettes and paying close attention to the fact that there has to be a given level of nicotine for people to keep on smoking and a lot of research on trying to figure out what that level is that will keep people smoking.
Q. Is attempting to keep people smoking the same as attempting to addict or habituate smokers, in your mind?
A. Well, they're already addicted or habituated at that time. It sustains that.
Q. Let me just ask the question very straightforward. Do you believe that the cigarette manufacturers have purposefully and intentionally addicted and habituated smokers?
A. Yes.
Q. We will come back to nicotine at some length

today, but let me talk to you about this low yield cigarette issue. It's certainly true that the manufacturers have over the years decreased the yield of the tar and nicotine content of their products, correct?
MS. WHITE: Well, vague and over broad.

THE WITNESS: Not exactly as you stated it. Not the content. The delivery by machine testing.
MR. FURR: Q. Okay. And they were encouraged to do so by virtue of the entire public health community, weren't they?
A. Yes.
Q. And over the years since the early fifties or so, the manufacturers have been able to decrease the yield of tar at least by FDC testing by about 60 to 70 percent, haven't they, Dr. Benowitz?
A. Yes.
Q. And while they weren't able to achieve quite that much decrease in the nicotine content of smoke by machine testing, they have dramatically reduced the content, the nicotine content of smoke, haven't they?
A. Not nicotine content of smoke. Nicotine delivery by standard testing.
Q. Okay. And that's been dramatically reduced, hasn't it, sir?

A. Yes.
Q. And those reductions have been obtained using the testing methodology that the companies are required to use by the federal trade commission when they test their cigarettes, correct, sir?
A. Yes.
Q. Let's go back to your disclosure for just a minute, Dr. Benowitz. Let me ask you what opinions or testimony you're prepared to provide about the feasibility of alternative designs of cigarettes?
A. Uhmm, well, that's not something that I've specifically planned to testify about. What I could testify about are things like you could reduce nicotine content of cigarettes and make them non-addicting, which is something that I wrote about. You could when you manufacture low yield cigarettes provide information to consumers as to how not to compensate for those cigarettes and so how not to expose themselves to just as much toxic materials from higher yield cigarettes.
Things likes explaining about ventilation holes, explaining not to block ventilation holes, explaining not to increase the number of cigarettes you smoke, explaining not to inhale cigarettes more deeply. There are a bunch of things that the industry

has written about and understands people do and has not ever tried to educate the consumer about.
Q. But -- by the way, when the public health community was advising the cigarette -- in fact, urging the cigarette manufacturers to decrease the FTC tar and nicotine yield of the products, the issue that compensation may occur was already known, wasn't it, sir?
A. It began to be known in early seventies. I think some of the pressure to reduce yields actually began in the sixties.
Q. Okay.
A. Although there was some inkling by the studies that really made it very clear were the early seventies.

Q. Maybe we can shortcut this feasibility alternate design testimony by asking you this question. Do you consider yourself to be an expert on cigarette designs?
A. Expert knowledgeable about it, but I certainly never designed a cigarette.
Q. You've never designed a cigarette, obviously.
A. That's correct.
Q. Now, there are a number of components to whether or not an alternative design of a cigarette

would be feasible, aren't there?
A. Yes.
Q. One component of that would be technical feasibility, whether the design can actually be manufactured, for example, correct?
A. Yes.
Q. Another component would be a commercial feasibility, that is, whether or not the new design would be accepted by consumers; is that correct?
A. Yeah, but that's a little tricky. That has to deal with how they're introduced and marketed. Not so black and white. For example, when the first filtered cigarettes were marketed, people hated them. They didn't like to smoke them. Now no one smokes non-filters, virtually. So people have to re-learn a taste. So it is possible to gradually introduce another design of cigarette and have people re-learn taste.
Q. Okay. Your disclosure also states that you may testify regarding the plaintiff's clinical level of nicotine addiction.
A. Yes.
Q. And what would your testimony be in that regard?
A. That she was highly addicted.

Q. And how do you evaluate the degree to which someone is addicted to nicotine?
A. Well, some of the factors are the age at which they start smoking, the number of cigarettes they smoke, what happens when they try to quit smoking, how soon after they wake up in the morning have their first cigarette. The sorts of situations in which they'll continue smoking, such as when they're sick or if they're in a situation where they can't smoke, if they have difficulty staying there, if they have to go somewhere else to smoke, bunch of these things, and all of those characteristics Leslie Whiteley appears to be highly addicted.
Q. Well, she smoked about 17 or 18 cigarettes a day, is that correct, sir, for most of her smoking career?
A. On average, although from about the 1980's on, she was smoking pack, pack and a half per day. So depends how you average it out. For her whole career that's probably right, but she did smoke more toward the end than the beginning.
Q. How many cigarettes a day does the average smoker smoke?
A. In the U.S.?

Q. Yes, sir.

A. I think currently it's 18 or 19, something like that.

Q. So largely for most of her smoking history, Leslie Whiteley smoked about the average number of the cigarettes per day?

MS. WHITE: Misstates his testimony.

MR. FURR: Q. Correct, Doctor?

A. If you average consumption, she smoked Consumption less in the beginning. More toward the end.

Q. Now, I believe you said another factor you look at to evaluated how addicted they are is quit attempts. Is that correct, Doctor?

A. Yes.

Q. You and other scientists that study smoking cessation have defined serious quit attempts as efforts in which an individual has been able to quit 24 hours with the intent to quit permanently; is that true, sir?

A. Yes.

Q. Now, to your knowledge, how many serious quit attempts did Mrs. Whiteley make between 1972 and 1998?

A. Two.

Q. Two. That's really not very many, is it, Dr. Benowitz?

A. Well, I think she would have done better had she done -- had she done more, but I think certainly they were serious. First one she went two weeks, seemed to be pretty motivated to try to quit and had great difficulty. So it wasn't a lot of quit attempts, but it was a serious one.

Q. You have interviewed smokers, haven't you, sir, who came to have made 20 to 100 serious quit attempts in their lives, haven't you?

A. Yes, I'm sure.

Q. So at least on that factor, how would you use that factor to describe Mrs. Whiteley as a highly addicted smoker?

A. Well, it's a little complicated because there are some people who are so highly addicted that they have learned that even not smoking for a few hours makes them so uncomfortable or unfunctional or whatever that they don't even attempt to quit at all. That's sort of the extreme case.

Now, you know, those cases, they've learned they just can't get along without cigarettes, and they don't go any days without cigarettes they always make sure there's cigarettes for the next morning. There's a behavior that's just maintaining a drug availability.

In her case, we do have one serious quit attempt for two weeks. She did try, and she failed, with a lot of symptoms, and I think that's certainly is enough to convince her that she was highly addicted.

Q. We really don't have -- do you have any

evidence that Mrs. Whiteley was one of those types of smokers that had at some level of consciousness recognized that she was so high lie addicted that quit attempts would be futile?
A. I don't think she said that, but I think many smokers sort of learn that by just finding out what happens when they don't have a cigarette for an hour or too, and they are just so uncomfortable they don't get to the point where they will quit, or they think, well, I'll quit later when I need to, when I start getting sick or something like that. But, no, I didn't -- I don't recall her saying specifically that what you just said.
Q. Okay. Do you have -- beyond her saying expressly, do you have any evidence that Mrs. Whiteley was one of those types of smokers that have recognized that she just wasn't able to quit?
A. Well, when she was asked about trying to quit, she said, "I tried to quit a number of times.

Most of the time, I quit for an hour or two. One time I quit for a couple of weeks, and it was shear hell." It's hard to know what those hour or two quit attempts meant. It could mean that she just felt very uncomfortable after an hour or two.
Q. But didn't she also testify many of those hour or two long quit attempts, didn't she concede that those really weren't serious quit attempts on her part?
A. That's right, but the question is why not? Sometimes it's not a serious attempts because they figure out after a short time they're just not ready. They can't do without cigarettes so they don't go longer than that she didn't state that but that certainly is the case with some very heavy smokers. They just will tell you, I know I can't go without a cigarette.
Q. But she did not testify in that way, did she?
A. Not in those words.
Q. Sometimes people make very short term quit attempts. They soon stop and begin smoking again because they just weren't serious about quitting. They really didn't want to quit, right?
A. Well, not exactly. It's always a balance. Uhmm, when people make a quit attempt, there's

obviously something that's making them make a quit attempt. I would assume for most people making a quit attempt, they would rather not have been a smoker at that time. They would have never been a smoker because they would rather be a non-smoker at this time.
They try to quit, and they can't for whatever reason, either something very positive about the cigarettes that they get or something negative when they don't smoke or some combination of those two. But I lost track of your specific question.
Q. That's okay. Let me ask another question. In 1989, Mrs. Whiteley did make a serious quit attempt, didn't she?
A. Yes.

Q. And as she testified, she was able to quit for about two weeks, wasn't she?
A. Yes.
Q. Why did she quit then?
A. Well, she was with her husband, and she and her husband were trying to quit together. Let's see if I -- she tried to quit because of the children. She was planning on having more children. She was concerned about smoking with children. She did, in fact, try to smoke outside at times when children were

in the house. So I think it was because of the children.
Q. So did you understand one of the motivations for her to quit effort or quit attempt in 1989 to be concerned about the health consequences of smoking?
A. Well, certainly, or passive smoking for the children.
Q. Now, obviously or her testimony is that she was able to quit for about two weeks, correct?
A. Yes.
Q. Certainly within two weeks she would have had minimal, if any, nicotine remaining in her circulation, correct?
A. Yes.
Q. And isn't it true, Dr. Benowitz, that for most people, the withdrawal symptoms from nicotine peak at about two to three days?
A. Some withdrawal symptoms.
Q. The physical withdrawal symptoms?
A. Yes.
Q. Okay. And isn't it true that for most people physical, withdrawl symptoms subside greatly by about two weeks?
A. Yes, except for one.
Q. What's that?

A. Sort of a what's called a dysphoria. They just don't feel right. They don't don't feel normal, and they have a craving for smoking, and that can persist in people for a long time, and that's probably the main trigger for relapse more than the acute withdrawal symptoms. They just don't feel right.
They've been used to having nicotine in their system as an adjunct to their behavior for many years. Their brain chemistry is still messed up, and they don't feel right. They don't feel good. They smoke a cigarette, and they feel fine. That symptom is probably the most important one, and that's one that's only really been discussed in recent years.
Many smokers will just tell you, "I just kept on thinking about cigarettes. I wasn't having irritability, maybe, but I just kept on thinking about cigarettes. I just -- when I smoked my first cigarette, I just felt better." That can occur for months after you stop smoking.
Q. Why did Mrs. Whiteley stop smoking again in 1989?
A. Why, you mean after the two-week --
Q. After the two weeks.
A. I think she was constantly fighting with her

husband, and she just was feeling miserable, and she

started again, and her husband kept off cigarettes for a while longer, but he relapsed also a little bit later.

Q. Let's talk about a little different topic. You've testified in the past that one of the ways that nicotine elicits its effects is to interact with the receptors in the brain. Is that correct?

A. Yes.

Q. Nicotine is really not very unique in that regard is it?

A. No.

Q. I mean, isn't it true that on one or more general level, if we believe the -- leave the brain for a moment -- that virtually all substances that we ingest or inhale to our body elicit their physiological effects by interacting with specific receptors in our body?

A. Yes.

Q. Isn't it true that the food we drink and the foods that we drink -- excuse me. Foods we eat and foods that we drink produce energy and growth and provide the nutritional needs that we require by interacting with specific receptor sites in our body?

A. There are a lot of different receptors for different body hormones elicited by foods and things

like that. Receptors are a common way for information to be conveyed within the body from one place to another for drugs to act or hormones to act or whatever.

Q. Many therapeutic drugs elicit their pharmacologic effects by interacting with receptors in the body, don't they?

A. Yes.

Q. Does it make something an addictive substance merely because there is a receptor in the body that it interacts with to elicit its effects?

A. No.

Q. And there are a variety of substances that interact with receptors in the brain?

A. Yes.

Q. Things like caffeine and sugar, for example, will bring about the mental or emotional effects that they cause by interacting with receptors in the brain?

A. Caffeine does. Whether sugar produces emotional changes to the receptors I'm not sure.

Q. Now, when my eight-year-old has too many chocolate bars, I can't get him to bed at night because he's hyper. Isn't that because the chocolate is interacting with receptors in the central nervous system in some way?

A. Well, there's caffeine and theobromine in chocolate, too. They can have direct effects. I just don't know if it's the sugar.

Q. Dr. Benowitz, you are a member of the American Society of Addiction, aren't you?

A. No.

Q. You're not. Are you familiar with that organization?
A. Yes.
Q. You attend meetings of that organization from time to time, don't you?
A. I've been an invited speaker several times in that organization.
Q. Were you an invited speaker -- didn't you attend the meeting that was held just a week ago?
A. Yeah. Was it a few weeks ago or couple months ago? Yes, recently, in the past couple months.
Q. I'm talking about the meeting at which one of the topics of discussion was whether or not the overconsumption of food can be viewed as an addiction. Were you present for that meeting?
A. No. Well, I might have been at the meeting, but I wasn't at that session.
Q. Can food be addictive?
A. Well, it's not drug addiction. There can be

compulsive eating. It's hard to avoid compulsive eating because everybody needs to have food, and so it's a compulsive behavior, the same way drug addiction is a compulsive behavior. But the difference about drug addiction is no one ever needs to have a drug like nicotine in their system, and if they never get it, they never become addicted. They never miss anything in terms of they can grow. They can live. They can survive.
With food, you can't do that. With food, everyone needs to eat, and everyone needs to take food, and some people can't control the use of food, that's true, but it's not the same as a drug addiction that's induced by a substance you never, ever have to have.
Q. By definition, food and drugs are different things, right?
A. What they share in some cases is a compulsive behavior, but a compulsive behavior alone does not make drug addiction.
Q. Well, we all have to eat, but we don't have to overeat, do we?
A. Correct.
Q. Food can be eaten or used compulsively, can't it?

A. Yes.
Q. Clearly many foods are psychoactive, correct?
A. Well, you certainly feel different after.
Q. Sure.
A. You eat. It's not -- it's hard to characterize it as specifically psychoactive. It depends what you're eating what's going on. If you're starving and you have low blood sugar, and you eat and you feel better, it's got a great psychoactivity.
Q. Right.
A. If you eat a huge amount and fall asleep, that's got psychoactivity, but that's not -- I don't think about psychoactivity in the very specific sense with food. I mean, it can have effects on how you feel, that's for sure.

Q. Okay. And as I've understood your testimony in the past, at its essence, what psychoactivity means is whether ingestion or use of a substance has effects on how you feel, correct?
A. How you feel or how you think.
Q. Okay. And the ingestion of food clearly is reinforcing, isn't it?
A. Yes.
Q. And those are the three major criteria that the surgeon general used in 1988 to define addictive

substances, aren't they?
A. Well, it was folks on drugs, and it was a drug that had psychoactivity, was reinforcing, and was used compulsively. It was not a food. You know, again, you could take that to another level and say that air is addicting because everyone needs to breathe, and no one will go without breathing.
Well, you need to breathe, that is true. Everyone breathes compulsively, but doesn't make it drug addiction. Just means you need to breathe to live. So I think one needs to separate out compulsive behaviors by the nature of the behavior. A drug addiction is different because you never ever have to have nicotine in your system to live a normal life, but you always have to have food in your system to live a normal life, and people -- there are no companies that market food on a basis of addicting people to a product to keep them using a product, but certainly that's true with drugs.
Q. Let me just follow up on that distinction a bit.
MS. WHITE: Before you do that, could we just take a short break?
MR. FURR: Sure.
(The deposition was in recess from 4:30 to

4:43.)
MR. FURR: Q. Dr. Benowitz, we were talking about various issues related to eating, and let me ask you this. Obviously, people do need to eat to live, but they don't need to overeat to live, do they, Doctor?
A. Correct.
Q. And people sometimes continue overeating even when they know they should stop, don't they?
A. Yes.
Q. People continue overeating sometimes when they know that when overeating is causing them health problems, don't they?
A. Yes.
Q. And so in many ways overeating is very similar to the definition of compulsive use that you have utilized in the past to describe nicotine, isn't it?
A. Well, a compulsive behavior is -- well, a drug addiction is a compulsive behavior. Overeating can be a compulsive behavior. They're both compulsive behaviors. Within the big picture of compulsive behavior comes drug addiction, which is a specific compulsive behavior that's maintained by the effects

of the drug. So it's got some things in common and some things different.

Q. Okay. You have seen scientific papers published within recent years describing overeating or the overconsumption of food as an addictive behavior, haven't you, sir?

A. Yes.

Q. And you've seen those in scientific publications not just in lay publications haven't you?

A. Probably. I don't recall specifically, but it would not surprise me.

Q. Do you believe that overeating can be described as an addictive behavior?

A. I think it's a compulsive behavior. I like to use addiction for drugs for a specific sort of process where I think that the term was developed. It's clearly a compulsive behavior. I have no question with that. Drug addiction is also a compulsive behavior.

Q. And we're established that food is psychoactive, haven't we?

A. In a slightly different way than drugs, but it can be psychoactive, yes.

Q. And clearly eating is a reinforcing -- is a behavior that's reinforced by food, isn't it?

A. Yes. I mean, all those things I agree with,

but what's different is that it's not a specific drug that a person begins to take and can't stop using. It is a food which everyone has to have, and some people have trouble controlling its use. It's also a different magnitude of issue. Most people when they start using tobacco have trouble stopping once they become regular smokers. Most people once they start eating don't become compulsive eaters

Q. What percentage of overweight people want to lose weight?

A. I'm sure all of them, or I'm not sure all of them. Probably most of them.

Q. And don't most of them make some effort at losing weight virtually every year?

A. A lot do.

Q. And not very many of them succeed, do they?

A. Correct.

Q. And, in fact, with respect to the likelihood of success of losing weight among overweight people, those statistics are very similar to the statistics for smoking cessation, aren't they?

A. Probably.

Q. Dr. Benowitz, you're a professor of medicine, psychiatry, and is it biopharmaceutics?

A. Biopharmaceutical sciences.

Q. What is forensic psychiatry?

A. Forensic psychiatry is the interface between the psychiatry and the law. So deals with issues such as whether a murderer is competent, questions like that.

Q. What do you mean by competent?

A. Well, what's the term? An intended murder. There's a legal term for this slips my mind. Premeditated, whether a person can premeditate an act that's illegal. Sometimes a psychiatrist is called to say whether that a person thinks that this was premeditated or not.
Q. Why do we test people for mental competency in the legal system?
A. I can tell you what I guess. I don't know exactly what the rules are, but, you know, my understanding of it is that if you're not competent, then there is a different punishment for what you've done than if you are competent.
Q. Is another way of saying that is that if you're not competent, you're not held to be responsible for your actions to the same degree as someone who is competent?
A. Yes.
Q. Have you ever administered a mental

competency test to anyone?
A. Not for that purpose. What I do do is do mental status examinations, which has some overlap with that. I sometimes interview patients with respect to competency. For example, when there's a medical procedure that has to be done and a patient doesn't understand it or doesn't want to have it done or someone is sick and wants to sign out of the hospital, you know, but I call a psychiatrist to do that.
Q. If you wanted a formal mental competency test performed, you would call a psychiatrist to do it, correct?
A. Yes.
Q. And a psychiatrist who performs the mental competency test in your hospital, I take it?
A. Yes.
Q. You wouldn't attempt to perform a formal mental competency test?
A. Not a formal one. I would do it informally if I were concerned or call a psychiatrist to do it formally.
Q. What is the mental status test that you do?
A. Well, mental status test just has to do with things like a person knows where they are, the date,

who is the president, if they can do simple mathematical things, to get a sense of the person's general intellectual level of functioning.
Q. Are you familiar with the methods that psychiatrists use to perform mental competency tests?
A. Not specifically.
Q. Do you have an understanding of what the word cognitive means as used by psychiatrists?
A. Yes. Cognitive used by scientists broadly, not just psychiatrists.
Q. What does it mean?
A. It has to do with the thinking process, being able to -- being able to think, to analyze information, to solve a problem. They're all cognitive behaviors.

Q. Okay. Cigarette smoking does not interfere with someone's cognitive abilities, does it?
A. Correct.
Q. Are you familiar with the term denial as that term is used by psychiatrists?
A. Yes.
Q. What does that term mean?
A. Well, it means that a person doesn't recognize what seems to be an apparent truth to somebody else, like, for example, it's used in drug

addiction all the time for when a drug is harming a person, and they say, "I'm fine." That's denial.
Q. Do you have an opinion as to whether Mrs. Whiteley was engaging in denial when she continued smoking in the face of the information that she had available to her about the health risk of smoke?
A. Yes, I think she was.
Q. She was?
A. Yes.
A. It's quite common. You have to think why would anyone do something that's self-destructive for years and years and years if they're not suicidal? Well, they're addicted to a drug, which is why they do it, but then this question is, how can they reconcile that to themselves and so one way they reconcile is by saying, well, it's not really bad for me. I mean, that's denial.
Q. Well, when a smoker tells you that they would like to quit smoking, are there any methods or approaches that you can use to assess the sincerity of their desire to quit smoking?
A. Well, it's difficult. You can look at things like expectancy. Do you -- how likely is it that you think you are going to quit smoking? You can do

things like make them do something to put themselves out. Pay monay for treatment. Come to a clinic, and if they show up -- there are a bunch of things that give you some evidence about that.
But, for example, if you look at smoking cessation treatments that people come. They pay money. They take drugs. They come back for counseling to quit smoking. I mean, something is making them put themselves out to do all those things. If it was -- if they were not addicted to the drug, then they would just stop, but they're doing a lot of things that try to change a behavior, which is unsuccessful. So those are some of the things that look at what a person's willing to do to quit smoking. I think a person who quits for two weeks that is really uncomfortable and keeps on not smoking is pretty motivated for that period of time.
Q. Talking about Mrs. Whiteley now?
A. Yes.
Q. Well, Mrs. Whiteley never went to any type of clinic, did she, for assistance in stopping smoking?
A. No.
Q. Mrs. Whiteley never used any type of nicotine replacement therapy as an aid in stopping smoking, did

she?

A. No.
Q. Mrs. Whiteley never underwent hypnosis or counseling or sought any type of assistance in stopping smoking, did she?
A. No.
Q. When someone who is attempting to quit smoking tells you that they are experiencing severe withdrawal symptoms, are there any approaches or methods you can use to assess the sincerity of those statements?
A. Well, you can certainly look at how other people perceive them. You can look at job performance. If that's -- for example, some people say they can't concentrate, and their job performance may be worse, make errors. A common thing is they start fighting with their spouses and their family, which she reported that she did, or people report them as being irritable or grumpy or whatever. So that's -- those are some of the things that you can do to try to get some verification of symptoms.
Q. Let me ask you about that. What do you think of the strategy of Mr. and Mrs. Whiteley attempting to quit smoking at the same time? Was that a helpful thing to do?
A. Well, yeah, I think it's a good idea to try

that because often be supportive of one another. Now, it can backfire. Both people really grumpy, start fighting more, it might not work, but a lot of counselors will try to get a husband and wife to try to quit smoking together and support each other because it's really hard for one to quit while the other one is still smoking because they're exposed to smoke. They're exposed to the behavior, and just big temptation. So it's nice if both can quit together.
Q. Do you have an opinion as to whether Mrs. Whiteley either currently or at any time in the past had any type of mental disability or problem that would have made her not responsible for her own actions?
A. No.
Q. You don't have such an opinion?
A. I don't have an opinion one way or the other.
Q. Obviously, just because you're a cigarette smoker, that doesn't make you not responsible for your own actions, does it?
A. No.
Q. Dr. Benowitz, there are physicians who specialize in addiction medicine, aren't there?
A. Yes.
Q. Doctors who spend large portions of their

professional life treating patients with drug and other types of addictions correct?
A. Yes.
Q. You're not one of those types of doctors, are you?
A. No. I do research on addiction, but I don't

spend most of my time treating addicted patients.
Q. Do you spend any of your time treating addicted patients?
A. Not as a specialty. I -- my practice is mostly cardiovascular medicine. I treat my own patients, but not because they come to me for treatment for addiction. Because they happen to have heart disease and they're also addicted.
Q. If it turns up that one of your patients is addicted to a drug, do you treat them yourself, or do you get a consult or refer them to someone else?
A. Well, I treat them, but I also encourage them to go to a smoking cessation clinic, which we have at the hospital.
Q. What if it's another drug?
A. Well, if it's heroin, I would suggest that they go to a clinic that specializes in that, or cocaine. Sometimes in the hospital we deal with severe drug withdrawals. So we deal with the acute

withdrawal problem, but for treatment of those things, I would send them to the the clinics, and we have a number of substance abuse clinics at my hospital.
Q. Okay. Can I have the next -- Dr. Benowitz, obviously you know who Dr. Koop is, don't you?
A. Yes.
Q. Dr. Koop was the surgeon general at the time that you were the senior scientific editor of 1988 Surgeon General's report, correct?
A. Yes.
Q. I assume that you believe Dr. Koop is an authoritative source on smoking and health issues, don't you?
A. Yeah, but there's a funny term to say authoritative. I certainly respect his opinions a lot.
Q. You believe he's knowledgeable about a variety of smoking health issues, don't you?
A. Yes.
Q. Do you believe he's knowledgeable about addiction to cigarettes?
A. Pretty knowledgeable. For most people at his level, I think he knows a lot.
Q. Do you think he knows a lot about smoking cessation?

A. Well, I think he learned from his involvement in the Surgeon General's report. I doubt he ever did any of it himself, any therapy himself.
Q. Tell me. Something have you ever visited Dr. Koop's website?
A. I've heard a lot about it, but I've not visited it
Q. Have you heard about drkoop.com?
A. Yes.
Q. I wanted to ask you a few questions about that let's mark this.
(DEPOSITION EXHIBIT NO. 19
WAS MARKED FOR IDENTIFICATION.)
MR. FURR: Q. We've marked as Exhibit 19 a multi-page document, and I'm going to

represent to you it is a reprint of the drkoop.com website, and I'm going to ask you about a few statements that are contained in those materials. Let me ask you first about a statement that appears on the very first page under the heading oh here about the -- go I've got one for you, also.

MS. WHITE: Oh, thank you.

MR. FURR: Q. Under the heading tobacco library, there's a statement that there's only one way to change your tobacco habit. You have to do

it yourself your way. Do you see that?

A. Yes.

Q. Do you agree with that statement?

A. Well, you certainly have to do it yourself. And if your way makes sense -- although, sometimes people don't know what the ways are. So you have to give them some ideas of what your way is. But, yeah, I think that's --

Q. Let me ask you a question about that statement. Now, Dr. Koop describes cigarette smoking as tobacco habit; is that correct?

A. Yes.

Q. He doesn't say tobacco addiction, does he?

A. No.

Q. Do you believe there's anything improper in Dr. Koop describing smoking as a tobacco habit?

A. It's not the way I would do it, but that's what he chose to do.

Q. But do you believe there's anything improper about that description?

MS. WHITE: Vague and ambiguous as to improper. Improper in what way? But go ahead. Do the best you can.

THE WITNESS: That's what he chose to talk -- to, you know, characterize tobacco. That's

not the way I would characterize it. He has -- it's hard to know what to say about it. I don't think it's the best way to do it, but he chose to do it that way

MR. FURR: Q. By describing cigarette smokings as a tobacco habit rather than a tobacco addiction, do you believe that Dr. Koop was attempting to mislead smokers about the nature of their cigarette smoking?

A. No.

Q. Okay. Let me ask you to turn four more pages in.

MS. WHITE: Do they all say one of two? I guess -- oh --

MR. FURR: They have all kinds of different numbering systems.

MS. WHITE: So this --

MR. FURR: Page looks like this.

MS. WHITE: This is not the whole thing or --

THE WITNESS: I got it. This one.

MR. FURR: Q. Okay. Let me ask you about a statement that appears on that page. The statement is -- it's in the bottom full paragraph, quote, "There are so many different types of tobacco

users that each person must create their own plan to reduce or quit their tobacco use. A one-size-fits-all plan is not effective." Do you see that language?

A. Yes.

Q. Do you agree with that statement?

A. Yes.

Q. Ask you now to turn to the next page. I'm sorry. It's not the next page. It's four more pages to a page that looks like this page, two of three at the top.

A. Okay.

Q. At the top of -- on that page, Dr. Koop has written, quote, "Very few relapses (only two to nine percent), occur because of physical withdrawal symptoms," correct?

A. Yes.

Q. Do you agree with that statement?

A. I'm not sure where he got that number. Most people who relapse relapse within the first few days of quitting smoking. So I'm not sure where that number two to nine percent came from. I would have given it a higher number than that, but I don't know what his source was.

Q. What number would you give it?

A. I think depends on what part of the curve. If you look at people who are trying to quit smoking,

about 50 percent relapse within the first couple days. I think a lot of those people are relapsing because of withdrawal symptoms. If you go out beyond the week, still a lot relapse by a week. There's probably 75 percent of the people who relapse will have relapsed already, and then we get beyond that I think most of those relapses are really not acute withdrawal symptoms, but either there's some key role dealing with, stress, or condition cues, drinking, or what I said before, dysphoria, just not feeling right without a cigarette. There are other things going on when you get beyond the first few days that are important. A lot of people relapse within the first few days. This figure is too low.

Q. Do you have a number in mind that you would use to describe the percentage of relapses that are attributable to acute withdrawal symptoms?

A. Well, if you talk about all the relapses, and I would say at least half.

Q. What would be your source for that number?

A. Well, the curves that look at the relapse rate over time, and just knowing what people talk about, you know, with early relapse and how they characterize it. I've not seen the specific study. I can't tell you that this number is based on the study,

I was telling you, knowing what the time course of symptoms are and what the time course of relapse is and people trying to quit smoking, my guess would be about 50 percent, but I don't know a study that says that.

Q. Okay. Now, what Dr. Koop says next is that

again, talking about relapse, incidence of relapse, most occur when you're anxious, angry, frustrated, or depressed, especially if you were offered tobacco at such times?
A. Right. Now all of those are withdrawal symptoms.
Q. Okay.
A. So it's hard to separate that out.
Q. So you agree with that statement, I take it?
A. Yes, but I wouldn't say that that's necessarily consistent with the first one unless you're -- well, again, goes back to what he means by physical withdrawal symptoms. Is being anxious, angry, frustrated, or depressed a physical withdrawl symptom? I think they are. I think it is because there's disordered brain metabolism.
Q. And what study would you do be relying on as the basis for that?
A. Well, we know that there are changes in brain

receptors and brain metabolism that occur, and it takes time for those to normalize when there's no more nicotine exposure, and we believe that those changes are what is responsible for anxiety, frustration, depression, all those things.
Q. How do you separate out in somebody whether these emotions such as anxiety, frustration, et cetera, are attributable to changes due to nicotine withdrawal through some internal influence?
A. Well, in the short term, you can't do that. What you find, though, if you follow the same people, is that these symptoms get more severe early on, and then months later, they're back to or better than a baseline. So there's some perturbation in the curve over time, and then you assume those are consequences of the drug withdrawal.
Q. As I understand what you said, if those people would persist and stick it out, then they get past that point and their emotional -- emotionally, they return to baseline; is that correct?
A. Right.
Q. I ask you to look at a sentence that's in the middle of the -- it says -- it's third paragraph. "Hard to estimate how much satisfaction is realistic for a situation or for an individual, but often

tobacco dependent people exaggerate the severity of the stress or expect more satisfaction than is truly realistic." Do you see that?
A. Yeah, but I have to look at the --
Q. Look at this in context, if you would.
A. That sentence itself doesn't make any sense to me.
Q. What do you understand Dr. Koop to be saying there?
A. Well, if I understand it right, it means when you quit smoking, it's not going to solve all your problems and you're going to feel wonderful, that you're still going to have problems with your life, and you have to deal with those as well. I think that's what he's trying to say

Q. And obviously you agree with that, don't you.
A. Yeah. I have to say I think it's kind of a strange way to put it.
Q. Isn't Dr. Koop saying that when people attempt to quit smoking, that often they exaggerate the severity of the stress that that smoking cessation effort induces?
MS. WHITE: Calls for speculation.
THE WITNESS: That's what it says, but I don't know the basis for that.

MR. FURR: Q. Do you agree with that?
A. No, and I'd like to look at evidence for it, but that's not my impression. My impression is that quitting smoking is very stressful for some smokers. Some who don't find it stressful, but a lot will say it's one of the hardest things they ever did, even years later.
Q. Okay. I'm done with that.
MS. WHITE: I have to interpose an objection as to the use of these documents that were marked as Defendants' 19, only because it appears that what Dr. Benowitz was just given is not complete. We'll move to strike on the basis of that at time of trial. It's difficult to tell because the pagination makes no sense, but apparently there are pages here pages one of three, two of three, and page three of three is not attached, and they're multiple examples of that within this document. It's hard to tell because it appears it's not complete.
Q. Okay. Dr. Benowitz let's talk about a different topic. It want to talk to you about Mrs. Whiteley's use of illicit drugs, if you will, sir. Tell me everything you know about Mrs. Whiteley's use of marijuana.

A. Well, I know she used it when she was younger. I guess she used it through age 28 or something like that, and she might have used marijuana for 10 years. So I guess it's from 18 or so until 28.
Now, I understand and I think -- I don't see in the records here, so it's possible that I heard this from Madelyn Chaber, that she used a few joints a week or something. I don't have an exact number to know that.
Q. That was going to be my next question. How frequently she used marijuana during those years.
MS. WHITE: From 18 to 28.
MR. FURR: During the years that she used it.
THE WITNESS: Yeah, well, it's my impression that she did not smoke every day, but she smoked on a regular basis.
MR. FURR: Q. When she smoked, do you know how intensely she smoked, whether she smoked a full joint or more than a joint, for example?
A. I don't know details about that.
Q. Do you know whether she smoked marijuana as a cigarette or using a pipe or a ball, for example?
A. I don't.

Q. Is marijuana an addicting substance?

A. It can be, but it's not very common. It's much less highly addicting than nicotine or heroin or cocaine or alcohol.
Q. People use marijuana compulsively, don't they?
A. They do, but it's in terms of total number marijuana users. It's a smaller percentage than for other drugs.
Q. Obviously people use marijuana for its psychoactive properties, correct?
A. Yes.
Q. And the use of marijuana is reinforcing, isn't it?
A. Yes.
Q. Was Mrs. Whiteley addicted to marijuana?
A. I have no idea.
Q. What would we have to know to answer that question?
A. Well, generally people who are addicted have trouble controlling use for some reason. So either they're always stoned, and it's causing problems for them, or they use it every day, and they can't stop using it if they want to. You have to have some information about the use pattern, about what the consequences of the use for her.

Q. Did you say the usage patterns?
A. The usage pattern and something about what consequences were there for her.
MR. BARRON: I'm sorry. I can't hear. We have got an air conditioner on here.
THE WITNESS: Did she suffer in any way as a consequence of the marijuana use? Did it have any personal cost to her? Those things you need to know to know about the issue of loss of control.
Q. What type of information would we need to understand her usage pattern for the purpose of understanding whether she was addicted or not?
A. Well, if she smoked marijuana every single day and had trouble not using every single day, that would suggest that she was addicted to it.
Q. I take it we would need to know how frequently she used it, obviously?
A. Yes.
Q. We would probably need to know what types of settings she used it in, wouldn't we?
A. That would be useful.
Q. We would need to know what type of activities or normal functions were disrupted by her use of marijuana?
A. Yes.

Q. We would need to know what type of activities or obligations that she would forego or neglect because of her mayor marijuana use?
A. Yes.
Q. Let's talk about another drug, and that's cocaine. Tell me, please, Dr. Benowitz everything you

know about Mrs. Whiteley's use of cocaine?
A. I don't recall any specific information about cocaine with her. I know there was some question of intravenous drug abuse with her husband, which is uncertain to me whether that happened or not from the records I saw. I don't think I have anything in my notes about cocaine. So I can't answer that question.
Q. So you're not aware as to whether she used I.V. cocaine, for example?
A. I do not know.
Q. You don't know whether she used crack cocaine, do you?
A. No.
Q. And I guess you wouldn't know whether she just snorted or inhaled cocaine?
A. I don't.
Q. Cocaine is an addicting substance, isn't it?
A. Yes.
Q. Cocaine -- usually use the drug compulsively?

A. Often do.
Q. It's psychoactive?
A. Yes.
Q. It's reinforcing?
A. Yes.
Q. Cocaine users certainly experience withdrawal symptoms when they attempt to quit, don't they?
A. Yes. Let me just say one thing. I do find a note in her husband's deposition, Leonard Whiteley's deposition, I'm not sure who it's about, though, but there's a history of six months' cocaine use before marrying, but I'm not sure if that was him or her. But that was mention of cocaine use. I would have to go back and look at his deposition and see if he was talking about himself or talking about his wife.
Q. As you sit here today, you don't know much about whether she used cocaine and how she used it, do you?
A. Correct.
Q. So obviously you're not in a position to offer an opinion as whether she was ever addicted to cocaine?
A. Correct.
Q. Can you compare for us the symptoms of and withdrawal that people -- that cocaine addicts

experience when they attempt to stop using cocaine to the symptoms that smokers experience when they attempt to stop smoking?
A. Yes. Although there are -- the pattern of cocaine addiction is often quite different than tobacco. Tobacco addiction is generally a behavior that's done on a repetitive basis day after day. Cocaine addiction is often binge use with inability to control binges, and it's fueled by two things. One is sort of a positive effect that you get when you get high. People just sort of crave that, and also a phenomenon called kindling where you take one dose and makes you crave the next dose. This even more so people go on a run and keep on using and using.
When they stop using, there's sort of an

exhaustion state that occurs. So people when -- to go back -- when using cocaine, if you feel energetic, you have insomnia, you can't sleep, you have tremor, you don't feel like eating, so you often don't eat.

When you stop using cocaine, the opposite happens. You get very lethargic. You sleep for huge periods of time. You tend to eat a lot. You get very depressed. You have no energy, and sometimes that actually drives cocaine use, especially if you try to function, do a job or something, and you just feel

like totally wiped out, and cocaine will make you feel better again. So that's a sort of a withdrawal symptom that drives cocaine use in withdrawal.

Q. Do you have craving for cocaine?

A. Yeah, sure.

Q. All right.

A. But it's different than nicotine.

Q. How is it different?

A. Well, the sorts of symptoms are different, the sort of high that you get is much more intense. There's much more intoxication. There's -- it's less conducive to normal functioning as well. So it's hard to function at a job if you're really stoned on cocaine.

Conversely, when you've been on a long cocaine run, you may have a stage where you just can't function at all, where you're just sort of sleeping. So those symptoms are different from symptoms of nicotine, which you feel dysfunctional. You have lack of energy, but it's not as profound the same way as cocaine is.

Q. Obviously, cocaine use and cocaine addiction are much more disruptive to people's lives, lifestyles, than smoking cigarettes, correct?

A. Right, because with cocaine addiction, you

have trouble functioning a normal way. Cigarette addiction, you can't.

Q. I have heard crack cocaine smokers say that from the first time they took a hit of crack cocaine, crack cocaine became the most important thing in their lives. Have you ever heard stories like that?

A. Well, some people say that about all kinds of drugs. Although, it's interesting. Many people who are both cocaine users and smokers actually -- and there's a big overlap. We studied that and found about 90 percent of cocaine use are smokers.

Q. Why is that?

A. Well, we're not sure. May be that there's some common brain mechanisms, some predisposition. I'm not sure, but many people who quit cocaine use cannot quit smoking cigarettes. Cigarettes are actually harder to quit than cocaine because they've used cigarettes throughout their entire life to modulate all sorts of moods to function, to deal with stress or anxiety or loneliness. All those sorts of things, and then they can get by after a short time without cocaine, but they can't get by without nicotine. So even though nicotine is not as intoxicating, and the withdrawal symptoms are not as

profound, the trouble controlling it can be just as severe, and people can't stop smoking, but they can stop cocaine.

Q. Isn't it also possible that those people report having an easier time stopping cocaine use than smoking because their motivation to stop cocaine use is so much greater because it's disrupted and destroying their life in such a rapid fashion that they absolutely have to stop as opposed to cigarettes?

A. Well, that's possible. But there are people whose lives are threatened by the cigarette smoking who can't stop, either people who have had a heart attack, people who are coughing all the time, people can't breathe. I mean, they've got pretty good reasons to quit, too, and many of those don't.

Q. Since you don't know much today about her cocaine use, you obviously can't tell us whether Mrs. Whiteley was ever a cocaine addict, what type of symptoms she experienced when she stopped using the drug, can you?

A. That's correct.

Q. What can you tell me about Mrs. Whiteley's alcohol use?

A. Just that she was stated to be a beer drinker, and just look at my notes. I think there's some information about that. Okay. Her husband said

that they were both alcoholic, that they drank a six-pack of beer a day. Her sister said that she drank too much alcohol from age 16 until about 10 years ago, which would have been age 30 or so, 28, something. Drank beer, sister said a case a day. Seems like a lot. It's hard for people to drink a case a day, so it seemed like she drank a lot of beer, somewhere between a six-pack and a case.

Q. Go back to cocaine for one minute. The question I forgot to ask you is what type of information would you need to know in order to evaluate whether Mrs. Whiteley was ever a cocaine addict?

A. Uhmm, I'd like to know how she used it, how frequently she used it, the pattern of use. Did she binge? Was she a daily user? What happened when she stopped using it? Was it ever disruptive to her life? Again, what things could she not do because of her cocaine? What did she have to sacrifice because of cocaine use?

Q. You would like to know the duration of her cocaine use?

A. Yes.

Q. And you began that list by how much, by how many, the route by which she administered cocaine.

A. Yes. Although cocaine use can be addictive by all routes, it would be useful to know. I think intravenous use people are more likely to be addicted if they're using intravenously, and if they're occasionally snorting it, things like that

Q. That's what I was going to ask you about is

which route is more addictive, smoking crack cocaine or intravenous?
A. They're both pretty addictive. Snorting is pretty less addictive, but smoking and intravenous use are both highly addictive.
Q. Was Mrs. Whiteley alcohol addicted or alcohol dependent?
A. It sounds like it. I don't know much about her, if she had withdrawal symptoms when she didn't drink or why she drank, but the fact that she drank between a six-pack and a case a day, and her husband said she was alcoholic, and her sister said she was alcoholic sounds like she was.
Q. I was going to ask you, do you know why she quit drinking alcohol?
A. Her husband said that they would get drunk and start fighting, and so they both decided to quit. I don't know if she addresses that herself. I don't recall her deposition about that. She may have said

something. I just don't recall.
Q. Do you know whether Mrs. Whiteley was able to stop drinking on her own or whether she required medical assistance of any kind?
A. No. She quit on her own.
Q. How hard is it for someone addicted to alcohol, drinking it the rate she apparently was drinking, to quit, to stop drinking?
A. Well, you know, it's variable. Some people have severe withdrawal symptoms and have great trouble do it. Other people have tolerable withdrawal symptoms and can do it pretty well. It's variable. It's like smoking. Some people can quit smoking cold turkey and say that's not very hard. Some people try many times and can't.
Q. But isn't there a difference in terms of how severe the withdrawal symptoms can be?
A. Well, the withdrawal symptoms can be life threatening. With alcohol you can get convulsions. You can get delirium. Smoking you don't get that. You get mood changes. You might get concentration problems. You can get depressed, but it's not going to kill you directly like alcohol withdrawal could.
Q. And do you have any information what type of withdrawal symptoms she experienced when she stopped

drinking?
A. No.
Q. Dr. Benowitz, can you tell me everything you know about Mrs. Whiteley's use of LSD?
A. Nothing.
Q. Nothing. All right. Is LSD an addictive substance?
A. Well, not very. It's certainly psychoactive. People tend to use it mostly at parties, but it's not a drug that very many people use on a regular basis the same way they would use cocaine, for example. I suppose you could become addicted to it. I guess it's not very common.
Q. The World Health Organization does list LSD as a dependence producing drug, isn't it?

A. Yeah, I'm sure it can happen. It's just that the way most people use, it they don't use it that way. Use it at parties to get high or rock concerts or things like that.
Q. Can you tell me everything you know about Mrs. Whiteley's use of amphetamines?
A. Nothing.
Q. Are amphetamines addictive substances?
A. Yes, same way as cocaine.
Q. Amphetamines can be used compulsively, can't

they?
A. Yes.
Q. They're psychoactive?
A. Yes.
Q. They're reinforcing?
A. Yes.
Q. Since you don't know anything about her usage of amphetamines, you would not be able to offer an opinion as to whether she was ever addicted to amphetamines would you?
A. Not unless I know more about her.
Q. What type of information would you need to know to determine whether she was ever addicted to amphetamines?
A. The same answer as I gave you for cocaine.
Q. What are the withdrawal symptoms like when amphetamine addicts attempt to stop using amphetamines?
A. Similar to cocaine, amphetamine is like cocaine. The euphoria is not quite as intense. Lasts longer, but withdrawl symptoms are basically the same: lethargic, sleepy, eating more, depressed.
Q. Do you know whether it's more difficult for an individual that is addicted to one substance to stop using that substance or for an individual who is

addicted to multiple substances to stop using them all at once?
A. I'm not sure I follow your question. Are you saying if you are a multiple drug user, is it easier to stop one at a time as opposed to all at once.
Q. Yes. Yes.
A. There's actually a lot of ongoing research for that regarding smoking. It's not clear. It could be either way. Some people feel that it's better to stop, say, alcohol and tobacco together because if you stop smoking but you still drink, then alcohol becomes a trigger for smoking and vice versa.
Other people say that if you stop both drugs at the same time, it's just very stressful because you're having two things that are part of your life to have to deal with together. There's research ongoing about that question.
Q. Do you have a view yet?
A. Well, I think for alcohol and tobacco, my guess is it's going to be better to try to stop both together, but I don't think the answer is in.
Q. Does Mrs. Whiteley's ability to stop using alcohol without any medical assistance affect in any way your view of how addicted to nicotine she was?

A. No.

MR. FURR: Let's mark this as next.
(DEPOSITION EXHIBIT NO. 20
WAS MARKED FOR IDENTIFICATION.)
MR. FURR: Q. Dr. Benowitz we've marked as Exhibit 20 --
MS. WHITE: Do you have one for me?
MR. FURR: Q. Sure. An editorial that you wrote in 1997 new England Journal of Medicine titled Treating Tobacco Addiction, Nicotine or no Nicotine, correct?
A. Yes. Correct.
Q. I wanted to ask you about one sentence specifically and that's the last sentence on the right-hand column, the first page in the first paragraph where you wrote alternatively, a"It has been hypothesized that both depression and cigarette smoking reflect a common genetic pre-disposition as is the case for association between nicotine and alcohol abuse."
A. Yes.
Q. You see that you I wanted to ask you what you're talking about with respect to the case for association between nicotine and alcohol abuse?
A. Well, there is a concept called heritability, which is the percent of some characteristic that is a

genetic compared to say environmental, how much it came from your environment or your experiences compared to what you were born with. And for smoking, the heritability for smoking generally is about 50 or 60 percent. So a lot of it is really genetically pre-disposed for reasons we're not clear about.
Q. Do we know the gene?
A. Not yet. There are multiple genes involved most likely. My lab and a also a lot of other people, too, when you look at the inheritance pattern, alcohol and nicotine, there's a lot of overlap so that a lot of heritability is shared. So that people who are alcohol abusers are more likely to be nicotine abusers and vice versa. So we think there are some genes that share both those behaviors, which ones we don't know, but we think that they're --
Q. How do you know it's a genetic phenomenon and not an environmental phenomenon?
A. By what's called twin studies.
MR. BARRON: I'm sorry. Again, keep your voice up.
THE WITNESS: By twin studies
MR. BARRON: Okay.
THE WITNESS: Where you look at identical twins who have exactly the same genetic makeup and

compare them to what are called fraternal twins that don't have the same genes, but they're born at the same time. Now, assuming they're raised in families together, both types of twins will have the same family influences, and what you do is you compare behaviors within twins of the two types, and if some

behavior is more common in identical twins that in fraternal twins, since they both have -- both pairs have equal environmental effects, then you can estimate how much of that trait is genetic.

So, for example, if you look at smoking or alcohol, if your identical twin is an alcoholic or a smoker, you're much more likely to be an alcoholic or smoker than if you had a fraternal twin who was an alcoholic or smoker. So you can sort that out, and it's been worked out that there is an overlap. So it's not environmental. There are environmental factors as well, but both factors play a role.

MR. FURR: Q. So if I understand you, in part what you're -- there appears to be a genetic or heritable component that may make people more susceptible to becoming addicted to various substances; is that correct?

A. Yeah, it's been looked at specifically for alcohol and nicotine. Whether that's true for other

substances or not is not known at this time. Could be.

Q. I believe you said that the genes that would be related to that process for nicotine are not known yet; is that correct?

A. Correct.

Q. So at least as of today, there's no way to test a smoker or someone contemplating smoking to determine whether or not they have a genetic makeup that might tend to make them more likely to become addicted?

A. There are what are called candidate genes or things that people are researching, but nothing has been proven.

Q. Those tests aren't actually being used in any clinical practice yet, are they?

A. Correct.

Q. If you were to learn that in fact Mrs. Whiteley at various points in her life was addicted to multiple other drugs such as alcohol, cocaine, amphetamine, would that in any way affect the opinions that you hold with respect to her nicotine addiction?

A. No. I mean, it just -- people who are addicted to other drugs are often even more addicted

to nicotine, but like I said before, when you look at multiple drug users, many of them will say the hardest drug to give up is nicotine, even though they had multiple drug addictions. So I don't think -- it doesn't lessen the severity of addiction at all.

Q. As we discussed, it's possible that nicotine is the last substance that people give up because that's the substance that's legal and that they can get away with using without disrupting their life like the other substances; is that correct?

A. But even if you asked them, "While you're still using it, which drug would you have the hardest time giving up?" even when they haven't given it up, yet many addicts will say cigarettes.

Q. And many addicts say other things I take it?

A. Well, not everyone says cigarettes, but --
Q. What percentage of addicts would say cigarettes?
A. I have to look at that study. There's a study that was done by Kosnowski (phonetic) that looks specifically at this question, and I don't have it with me, but I have to go back and find that to get the percentage.
Q. Do you have an opinion as to why cigarettes would be more difficult to give up than other drugs?

A. Yes, because people use nicotine throughout the day to modulate arousal, to modulate mood, to deal with stress, to deal with anxiety when they're trying to cope with life. So it's something that's used to adapt to stresses all the time, and people get used to doing that, and then when they don't have nicotine, the feelings that they get are the opposite.
Say if you get stressed and you use nicotine to deal with stress, and then you have -- or depression -- and then you have a withdrawal symptom that's depression, or you feel stressed from any other source, first thing you want to do is have a cigarette because it's been linked in your mind. So I think that people come to use nicotine as a fundamental coping mechanism. Takes a long time to unlearn that.
Q. Tell me if this is wrong, Dr. Benowitz, but it sounds to me that one way to characterize what you're saying is that nicotine may be harder to give up because people perceive smoking and nicotine to have beneficial effects as they smoke throughout the day as opposed to the detrimental effects, and the disruption that the usage of other drugs would cause throughout their day; is that correct?
A. That's what they per receive, yes. Now, in fact, it's more complicated than that because if, say,

you perceive that smoking cigarette relieves depression or stress, but depression and stress also happen to be withdrawal symptoms, then after a while you can't sort out what the source of the depression would be or the stress. Is it not smoking a cigarette, or is it some environmental source, or both things can cause depression and stress, and you smoke to relieve both of them.
So you can't sort out how much of it is really a positive effect versus withdrawal effect, but the person's perception is exactly right. They say, "I need smoking to cope with life and to function normally," whereas, most people with many drug addictions realize at some point in time at least that their drugs are messing them up.
Q. Now, in Mrs. Whiteley's case, is there any way to sort out when she attempted to quit smoking in '89 and reported various symptoms, is there any way to sort out whether those were really withdrawal symptoms as opposed to environmental symptoms that she was no longer relieving through tobacco use?
A. Well, you know, it sounded like she had severe symptoms which resolved when she started smoking again. I mean, once she had her classic

symptoms, she went on vacation with her husband. You

would think that that would be, you know, relaxing and not so stressful.

Q. You would have to know her husband, I guess, right?

A. Yeah. It could be that that's not the case. But instead she found it to be extremely stressful, irritated, grumpy. They fought all the time. Certainly consistent with withdrawal. Now, I guess you would postulate that they just fought because they were spending too much time together, I don't know, but it certainly is consistent with what's been described for nicotine withdrawal.

Q. Well, I'm not really sure if that answers the question or not. I mean what I don't understand is how you can sort out whether the symptoms she began experiencing were as a result of withdrawal of nicotine or whether she simply began noticing those symptoms because she was no longer alleviating them through the use of cigarettes?

A. I don't think it matters. I think they're so intricately tied up together.

Q. Dr. Benowitz, why do people take illicit drugs?

A. Well, I can't answer that for everyone. Some people like to have their mood altered. There's --

and different drugs do different things. Stimulant drugs give you a rush. They excite you. Other drugs, you know, sort of sedate you or make you dreamy feeling, but what they have in common is that they change your mental state, and people -- some people like that.

I'm sure a lot of it starts out with peer pressure, or not peer pressure, but peer influence. Certainly alcohol starts out that way. Most kids when they start drinking start drinking at parties or with their friends, and it's only after a while they start drinking by themselves. Usually after they got out of high school they start really drinking in an isolated way.

And it's probably true for other drugs also. Their first exposure usually with friends, and then people like the mood altering effects and keep on using them, and then over time, the physical dependence comes in. First, you don't get physically dependent, but when you use a drug over and over again you do.

Q. Do you have any understanding as to why Mrs. Whiteley consumed alcohol to the degree and extent she became an alcoholic?

A. No.

Q. Do you have any understanding as to why Mrs. Whiteley used marijuana for what's being described -- or I should say used marijuana -- what's being described as extensively for a period of around 10 years?

A. No.

Q. Do you have any understanding as to why Mrs. Whiteley used crack cocaine?
A. No.
Q. Dr. Benowitz, from a medical perspective, do you have an understanding as to why cocaine and marijuana are illegal drugs?
A. Well, cocaine is illegal because it's disruptive to behavior and can be pretty hazardous to your health. Marijuana actually is not necessarily illegal for certain purposes. There actually are laws suggesting that it is; although, it's being debated, as you know. For medical purposes, there's a study I'm involved in now with AIDS patients on a research ward giving them marijuana to see if it helps them. So it's not necessarily illegal.
Q. Do you have an understanding as to why the use of marijuana other than pursuant to a prescription from a physician is illegal?
A. Yeah, I'm not sure. You can get different

reasons for it from different sources. Its main health effects are really accidents. That's the biggest concern about it, like alcohol. There's no evidence that marijuana use really causes any more. In fact, may cause less health adverse effects than alcohol. But I think many people in this country feel that one doesn't need another mind altering drug, and if there's some risk to it, like accidents, there shouldn't be another drug there are some people thinking that marijuana should be legal because it's much more harmful than a lot of other drugs. So it's been debated.
Q. Do you have an understanding why it is illegal to possess or use amphetamines other than pursuant to a prescription?
A. Those are highly addictive. Those are potentially harmful they're intoxicating.
MR. FURR: Let's take a five-minute break.
(The deposition was in recess from 6:00 to 6:19.)
(DEPOSITION EXHIBIT NOS. 21 AND 22 WERE MARKED FOR IDENTIFICATION.)
MR. FURR: Q. Dr. Benowitz, let me hand you what we've marked as Benowitz Exhibit 21, and

ask you whether this is a copy of a letter that you received from plaintiffs' counsel in which they were transmitting to you on October 22nd certain medical records related to this case.
A. Yes.
Q. After you received those records transmitted on October 22nd, did you review them and notice that certain materials had been redacted from them?
A. I really didn't look at that question. I was specifically looking for tobacco history, and I didn't even notice one way or the other about redaction.
Q. Did you ever mention to plaintiffs' counsel that certain medical records had been redacted in the set that you had been sent?
A. No.

Q. Had you noticed that, would you have requested that those records be provided to you?
A. It depends what was being redacted. Like I said, when I was going through these records, I was going through it from the point of view of tobacco use.
Q. Let me hand you a document marked as deposition Exhibit 22 and ask you whether that's a copy of a letter that you received from plaintiffs' counsel on November 3rd.

A. Yes.
Q. And in that letter, plaintiffs transmitted additional medical records to you, including records that had been previously redacted from the records sent earlier; is that correct?
A. Yes.
Q. Did you review specifically the records transmitted to you on November 3rd?
A. Yes.
Q. And what did those records deal with?
A. I don't recall, but it wasn't very helpful to my opinion, whatever it was. I don't even recall what was in them.
Q. Did those records deal with Mrs. Whiteley's illicit drug use?
A. I don't remember.
Q. Did you ever question plaintiffs' counsel as to why they had redacted the records in the first instance?
A. No.
Q. Dr. Benowitz, you've testified on a number of times -- you've testified on a number of occasions that one of the reasons that cigarette smoking is addictive is because of a bolus effect of nicotine that the smoker receives; is that correct?

A. Yes, a rapid rise of nicotine levels in the brain.
MR. FURR: Okay. Let me hand you -- or let's mark this.
(DEPOSITION EXHIBIT NO. 23
WAS MARKED FOR IDENTIFICATION.)
MR. FURR: Q. Dr. Benowitz, we have marked as Exhibit 23 a reprint of a scientific publication titled Arterial Nicotine Kinetics During Cigarette Smoking and Intravenous Nicotine Administration: Implications for Addictions; is that correct?
A. Yes.
Q. Have you seen that scientific publication prior to today?
A. Yes.
Q. This is a -- this publication appeared in a peer review journal; is that correct?
A. Yes.
Q. Obviously, Dr. Benowitz, you know Jed Rose, don't you?
A. Yes.
Q. In fact, you had some discussions with Dr. Rose as he was writing this publication; didn't

you?

A. Yes.
Q. I believe you are specifically recognized in the acknowledgement section; is that correct?
A. Yes.
Q. And your laboratory actually did some of the nicotine assays in connection with this study; is that correct?
A. Yes.
Q. I want to ask you questions about the findings of Dr. Rose. Let's look at the abstract. The first sentence states that "An understanding of drug addiction requires knowledge of the effective drug concentrations to which receptors in the nervous system are exposed," correct?
A. Yes.
Q. Do you agree with that sentence?
A. Well, it helps. I don't know "requires." Depends what you mean by understanding.
Q. Why does it help to have this information available?
A. Well, if you're trying to understand, for example, which receptors are going to activate, which are getting desensitized, bunch of subtleties about brain neurological function that it's useful to know levels in the brain over time. So if you want to

analyze addiction on that level, then it's important. It's not so important if, you know, you're talking about a clinical level, for example, diagnosing whether someone's addicted or not.
Q. The next sentence in the abstract reads that "It has often been thought that smoking of abused substances such as nicotine or cocaine produces much higher drug concentrations in the arterial blood than those achieved following any other route of administration,"? correct?
A. That's what it says; that's correct.
Q. And there has been a school of thought that was the case in the past, hasn't there?
A. It's complicated. That the dose is the same, but it depends on exactly if, for example, if you're smoking a cigarette, and you're taking in a milligram of nicotine over eight puffs over eight minutes, and you're going to give the same amount intravenously over 10 seconds, then you're going to get a much higher level with I.V. So it depends on -- this sentence has a lot of assumptions implicit in it.
Q. Well, you've testified on this topic in the past, haven't you?
A. Yes, but I say that smoking a drug is a way of achieving a very high concentration over a short

period of time.
Q. Compared to other routes of administration, correct?
A. Certainly compared to taking orally or taking nasally. Intravenously, the question is whether it's comparable or not, and maybe comparable -- I think

I've testified that it's comparable to intravenous.
Q. Okay. I believe you testified in the Henley trial --
MS. WHITE: Let me just interrupt for a second because I don't have a copy, and I do need one.
MR. FURR: I don't have an extra copy.
MS. WHITE: Okay. Let's go off the record for a second, and I'll make one, and for some reason my copy of Exhibit 19 is missing. It's the Koop --
THE WITNESS: I took that.
MS. WHITE: Okay. Thanks. I'll be right back.
(The deposition was in recess from 6:26 to 6:27.)
MR. FURR: Q. Okay. Dr. Benowitz, you testified in the Henley trial, I believe, that smokers receive bolus of nicotine when they take a puff, that rapidly resolved in high arterial blood

concentrations of nicotine approaching approximately 100 nanograms per million liter; is that correct?
A. Yes.
Q. Do you recall that testimony?
A. Yes. That's basically what we found in a study that was published a few years ago.
Q. This study finds different results, doesn't it?
A. Yes.
Q. Let's look at the third sentence in this abstract. Says, "However, to date, no studies have sampled arterial blood following cigarette smoking with the rapidity necessary to evaluate the hypothesis." Do you see that third sentence in the abstract?
A. Yeah, that's what it says.
Q. I take it there that what Dr. Rose is suggesting is a difference in the methodology employed in this study compared to the prior studies, including those that you had relied on in the past; is that correct?
A. Right. What he's doing is getting a detailed time profile, but the fact of the matter is, whenever you sample -- if you study sample arterial blood and venous blood at the same time, you can show an

arterial venous blood difference, which was what was shown before with the study that was published by Jack Henningfield, which we also did assays in that study. And, in fact, this study is at variance with both Jack Henningfield's study and a second study what we did where the first author was Gourlay.
So there are three studies, and I'm not sure why the results were different. He found variation. He found one person had levels as high as 50, and one person didn't have very high levels. So there's some individual factors that I don't understand in his subjects, but it's true that these results are different than the two other studies.
Q. And isn't it also true that this study clearly had some methodologic advances that the other

prior studies didn't have?
A. Again, what they do is follow the time course in the early seconds better, but in arterial venous difference, there is an arterial venous difference no matter when you measure it. We don't have the full time course, but we did find an arterial venous difference that was substantial. So that's unequivocal. That's just an observation.
Q. But there are two factors to this, right, and one is how large the peak concentration is, and the

second is how rapidly you achieve that peak concentration?
A. Correct.
Q. And now the methodology that he employed was better designed to address the question of how rapidly you achieve the peak concentration, wasn't it?
A. Yes.
Q. Reading on in the abstract, Dr. Rose states that "Our results show that for both routes of administration, concentrations of nicotine in arterial blood were more than 10 times lower than expected." You see that?
A. Yes.
Q. That is what his results show, isn't it?
A. Yes.
Q. Why would you focus your concentration on the -- your efforts on the levels or concentrations in arterial blood?
A. Because that's what goes to the brain.
Q. He then concludes that the interval of nicotine in arterial blood is substantially lower than would be predicted if nicotine were absorbed as rapidly as generally been assumed, right?
A. Yes.
Q. And that is a conclusion that his results

would support, isn't it?
A. Yes.
Q. And his results and conclusion are inconsistent in some ways with the testimony that you gave in the Henley trial, correct?
A. Yes, although my testimony was supported by two other studies, which is basically looking at the extent of the A/V difference. He found different result, and it's difficult to reconcile why his A/V differences were much lower than in two other studies.
Q. Today you would not testify on this issue the same way you did in the Henley trial, would you?
A. Well, the same observation, it is true that smoking delivers it quite quickly peak concentrations were occurring maybe not in five seconds but within 20 or 30 seconds. There still is a substantial A/V difference. He's saying that it's not absorbed quite as fast as I had said before, but it's still fast, still faster than other routes. It's still an essential aspect of why nicotine is so reinforcing and why it's so addictive.
Q. Well, actually he says it's about the same rapidity as I.V., doesn't he?
A. Yeah, but that's still pretty fast.

Q. But it's not faster than all other routes?

A. Well, I'm not sure that I -- that I ever said it's faster than I.V. I.V. is pretty quick, and smoking's pretty quick, but even if it's like I.V., still pretty fast.

Q. Okay. I may have misunderstand what you said just a moment ago. I thought you were saying that administering nicotine via inhalation was faster than all other routes.

A. That's what you had -- that's what Jed Rose had written as a second sentence, and I said it's faster than other routes except I.V.

Q. Okay. Let me ask you to turn to the discussion section. Let me ask you first, do you have any criticisms of the methodology employed in this paper?

A. The only concern that I had actually had to do with how the smoking was done. Let me just read this again because I brought this up to Jed when I first saw the paper. What I think he did was he used syringes to collect smoke and then had people inhale in a certain, specified way, a certain volume or certain way and specified the intervals of puffing.

So it was a little bit artificial in that sense, although, he tried to simulate what a puff size would be. We had people just smoke their own

cigarettes. So it wasn't controlled in that way, and it could be that some of the aspects of nicotine delivery are different in just smoking a cigarette compared to a controlled smoking. That's what I thought was most likely the sort of difference.

Q. You wouldn't expect that to account for 90 percent difference, though, wouldn't you?

A. I wouldn't expect it, but it was the only thing I could see to explain why they were different. I think it would be interesting to repeat Jed Rose's study with people smoking cigarettes the way they normally smoke them, and so he -- I think that's the only way to know.

Q. I know you don't have any criticism of the nicotine assays in this study, do you?

A. They're very good.

Q. Now, today you would not testify that the debatable scientific data demonstrate that smokers rapidly receive large bolus of nicotine transmitted to their brain in the order of a hundred nanograms a milliliter, would you?

A. Certainly not all smokers, but we've measured some smokers that have a hundred nanograms per million going in their arterial blood, not all, but that has been measured. He has one here that's 50. He also

has one that's only 15.

What I can say is that smoking is a way to rapidly deliver a drug to the brain in substantially higher concentrations than you would get by other routes except intravenous, but certainly.

Q. Let me ask you that -- I thought that what he

found was that peak arterial plasma concentrations of nicotine were actually approximately seven nanograms per milliliter looking at the first sentence in discussion section.

A. Talking about one -- oh, he's talking about a single puff. Well, first of all, I don't know where this predicted value of a hundred nanograms per mil of per puff comes from because our measurement of a hundred nanograms per mil was taken at the end of smoking a cigarette or during smoking a cigarette but not after the first puff. So that is not exactly referring to the previously published work. And so he found with a single puff seven nanograms per mil, but if you look at figure two, the levels after three puffs, here you're getting levels in one case as high as 50 nanograms per mil in one case, 25 nanograms per mil in one case, 18 nanograms per mil, and that's just three puffs.

If you take someone who is taking a puff,

it's quite consistent that the level or quite possible that the levels could be toward a hundred, maybe not reach a hundred. So it depends on the time sampling schedule. But still, even if you have something that takes eight puffs to deliver, you can get a pretty high concentration in arterial blood that would make you quite sick if you took it, say, orally, which is a point that I try to make. It's a rapid way of getting a drug into your system.

Q. It may be a rapid way, but it's not a rapid way of delivering a large bolus of nicotine to your brain if Dr. Rose's data are accurate, correct?

A. Well, you know the concept of a bolus is a relative one. It doesn't necessarily mean instantaneously, you know, bolus. Take some time to get there. If you look at some of his subjects, they got their peak concentrations within 15 to 25 or 30 seconds. Well, that still fits within the concept of a bolus. I use this to compare to, say, caffeine from coffee, but we're talking about peak levels in 30 minutes. So 30 seconds versus 30 minutes is a big difference. My point of view, that's a bolus. That's not as fast as two seconds, but it's still a bolus compared to caffeine.

Q. Well, if that's the bolus we're focusing on,

and the bolus is from the whole cigarette, you've got to admit that the concentration delivered in the bolus per puff was relatively low with him finding peak concentrations of seven nanograms per milliliter.

A. That's with one puff. That was his paradigm of smoking, which was a little bit of an artificial way of smoking. The fact of the matter is that it is possible to get to levels well above 50 nanograms per mil at the end of smoking a cigarette, and that's a pretty high concentration, and certainly enough to have substantial effects, but what he's done is really refining our knowledge at the time course of absorption, also variability, but that doesn't change the fact that you can still get the drug into your system pretty fast.

Q. What he has done, though, is elucidate that you don't get a hundred nanograms from a bolus when you take a puff off a cigarette, but it builds up over the entire smoking of the cigarette?
A. Right.
Q. Correct?
A. Right.
Q. And, in fact, the bolus that you get per puff is a level of nicotine that is very comparable to and perhaps even below the arterial blood level that you

can achieve with other nicotine replacement therapies, correct?
A. There's -- well, there's always a substantial arterial venous difference. I don't know if he has got venous levels here or not. I forget. We've measured arterial-venous concentrations biologically. There has to be a difference. Arterial levels have to be much higher than venous levels if you're delivering it rapidly, either I.V. or smoking. And when I drew my pictures in the Henley trial, I was drawing nicotine levels at the end of smoking a cigarette. I wasn't drawing a puff-by-puff because in fact you get multiple puffs, but the fact of the matter is at the end of the cigarette, you at least have twofold difference in arterial venous levels, and arterial levels can be pretty high. I think that's what we can say. It's not absorbed as fast as I thought with each puff based on Jed Rose's data, but it's still fast, not as fast, but still fast.
Q. And the actual increase or spike you get per puff is, in fact, in the range of the levels that you get from nicotine replacement products, correct?
A. On average with his system, which is artificial system. That's why I said what I would like to do is have him repeat the study with people

smoking their own cigarettes as they would normally smoke them. Take a puff, see what happens rather than this artificial syringe system.
Q. But there's really nothing about his system that you can point to that would cause you to expect him to get a decreased delivery of nicotine per puff, is there?
A. Well, there could be. For example, say there was an influence on the rate of inhalation, and you take a bigger volume with a cigarette for the first puff, and you saturate a transport mechanism so that you actually get more across if you took it in faster. That's possible. No nicotine has active transport. We know it's saturable. So I could theorize reasons why it might be different, but the fact of the matter is we don't know it's different until Jed does the same experiment with cigarettes, I mean people just smoking their cigarettes.
Q. Okay. As I understand what you're saying, there may be reasons based upon the transport kinetics of nicotine that would cause a difference in the peak and rate at which you achieve levels if you had different puff volumes?
A. Right. But, you know, I have to say I still

stand by the phenomenon of more rapid absorption of higher levels of smoking is an unequivocal phenomenon.

Q. It's just not as high -- at least according to Dr. Rose's high, it's not a high as a rapid as perhaps you believed in the past?

A. Well, I think what his study tells me is it's probably not as rapid. Being as high or not I think depends on how people smoke their cigarettes because other data suggests that it is higher.

Q. Dr. Benowitz, you've told us that you're prepared to testify that there are certain design aspects of modern cigarettes that you believe have been incorporated intentionally by the manufacturers in an effort to closely control the delivery of nicotine, correct?

A. Yes.

Q. And as I understood what you're suggesting you believe that those -- that nicotine has been closely controlled in that manner in an effort to habituate or addict smokers; is that correct?

A. Well, to keep them addicted, yes.

Q. Dr. Benowitz, isn't it true that if you were to simply roll an equivalent weight of tobacco leaf as it is when taken from the plant in the field in a paper and smoke it, that your yield of nicotine would be far higher than it is from that equivalent weight

of tobacco in the modern cigarette?

A. Yes.

Q. Modern cigarette? For example, currently manufactured cigarettes, such as Marlboro and Camel Light, yield far less nicotine than would cigarettes that consisted solely of an equivalent weight of tobacco rolled in paper and smoked?

A. Of course it depends where the tobacco is, from what part of the plant. So you can have different nicotine levels in tobacco, but certainly compared to the early cigarettes, which didn't have re-constituted tobacco in them, nicotine yields are lower.

Q. Dr. Benowitz, we touched on this earlier. You're not a psychologist, are you, sir?

A. No.

Q. Now, psychologists are the professionals that are skilled in and as a matter of course tend to do the type of testing that is done to assess people's cognitive skills as we defined them earlier, correct?

A. Yes.

MS. WHITE: We have not disclosed him as a psychologist in this action. He will not be giving testimony related to that field.

MR. FURR: Q. That's interesting.

Dr. Benowitz, you don't believe that Mrs. Whiteley had any deficit in cognitive skills that would have prevented her understanding the warnings that appear on the side of cigarette packs, do you?

A. No.

Q. I want to ask you just a few questions about

the definition of addiction in the '88 Surgeon General's report, and I'm not going repeat types of questions that I know you've been asked in the past about that.

A. Okay.

Q. So let's approach it from this end.

MS. WHITE: That's a positive sign.

MR. FURR: Q. When the definition of addiction used in the 1988 Surgeon General's report was adopted, the Surgeon General had already recognized for a long time that people smoke in compulsive fashion, correct?

A. Yes.

Q. That definition was adopted. The Surgeon General had also recognized for a long time that cigarette smoking and nicotine were psychoactive?

A. Yes.

Q. And the Surgeon General had also recognized for a long time that smoking was reinforcing, correct?

A. Yes.

Q. And so really when that definition of addiction was adopted, it was a self-fulfilling conclusion that smoking and nicotine would be found to be addicting, wasn't it?

A. Well, I guess you could say that for any addictive drug because those are the fundamental promise of any addictive drug.

Q. Well, though, isn't it a fair question because the definition adopted by the Surgeon General in the '88 report was a new definition, at least new to the Surgeon General, correct?

A. Well, it was one that really followed a movement from the World Health Organization, which shifted away from intoxication and, say, anti-social behavior to a loss of control of drug use, which is the key element of it, and so it's not -- it wasn't dependent anymore on intoxication. If you look at the updated World Health Organization statement about drug dependence, it no longer had intoxication as part of it. It really had loss of control and use of drugs as opposed to other things assuming a higher priority in your life than other activities. Those are the key elements, and therefore the Surgeon General's definition just operationalized that.

Q. I'm going through the World Health Organization here in a few minutes, I hope, but in answering my question, the definition adopted in 1988 by the Surgeon General was at least a new definition of addiction for the Surgeon General to use, correct?

A. Yeah. I'm not sure if the '64 report actually presented the definition of addiction or not, but this was the first report that I know of that actually laid out some definitions for addiction.

Q. All right. Instead of talking about definition, we'll talk criteria. The criteria that the Surgeon General was using in 1988 to assess whether nicotine is an addictive substance or not was -- were a new set of criteria for the Surgeon General to use to that purpose.

A. Compared to the '64, yes.
Q. Right. And really my simple point is that once the determination was made to use those criteria, the die was cast as to whether nicotine would be found to be addictive, correct?
A. Well, I mean, that, you know, sort of a circular issue. It's true that if you know nicotine is addicting and you develop criteria for addiction, then it's going to fit. Well, but that's not really quite how it went, is it?

Q. There was a set of criteria used in '64, and nicotine was assessed and found to be habituating, not addicting, correct?
A. Right, but those criteria were not consistent with current thinking in 1988.
Q. Well, I understand. We'll get to that, but I got to take one step a time.
MS. WHITE: Let him finish his answer. Were you finished, Doctor?
THE WITNESS: I'm saying either nicotine fits the criteria or it doesn't. If it fits the criteria, then you can always say that those criteria were chosen because nicotine fits it. There's no way to disentangle that.
MR. FURR: Q. Well, let's try.
A. Okay.
Q. You had a set out cri -- the Surgeon General had a set after criteria in '64, correct?
A. Yes.
Q. And evaluated nicotine to determine whether or not it should be labeled as an addictive substance, correct?
A. Yes.
Q. And found that using those criteria, nicotine was better labeled as a habituating substance than an

addictive substance?
A. Right.
Q. And in making those findings, the Surgeon General did conclude that there were certain criteria of the analysis that nicotine satisfied and certain other criteria that it did not satisfy, correct?
A. Yes.
Q. Now, in '88, the Surgeon General dropped the criteria that it had previously determined that nicotine did not satisfy, correct?
A. Yes.
Q. Surgeon General retained the criteria that it had previously determined that nicotine did satisfy, correct?
A. Yes.
Q. And at that point, the classification of nicotine as an addictive substance was done, wasn't it, once the criteria were adopted?
A. Yeah, but other things like cocaine then fitted in as well. Cocaine didn't fit the '64 definition and cocaine did fit the '88 definition. So it wasn't just nicotine. It wasn't -- it was that there was a sort of a shift in the addiction paradigm that started with World Health Organization and I

think spread to other areas.

Q. Let's look a bit at the transitions that the World Health Organization went through --
A. Okay.
Q. -- in the sixties because it is obvious that in the sixties the World Health Organization determined that it should take a different approach to looking at and classifying substances that were capable of causing dependence in people, correct?
A. Yes.
MR. FURR: Let's mark that as next one please
(DEPOSITION EXHIBIT NO. 24
WAS MARKED FOR IDENTIFICATION.)
MR. FURR: Q. Dr. Benowitz, we've handed you a document marked as Exhibit 24, which is a copy of the World Health Organization expert committee on addiction producing drugs, correct?
A. Yes.
Q. Dated 1964, correct?
A. Yes.
Q. I'm sure you're familiar with that document, aren't you?
A. I haven't read it for a long time.
Q. But you do know that that is the document that embodies the World Health Organization's decision

to alter the way in which it had been evaluating dependence producing drugs in the past, correct?
A. I believe so.
Q. Let me ask you to take a look at page nine of that document. There's a section four there entitled Terminology in Regard to Drug Abuse, correct?
A. Yes.
Q. Subsection Drug Dependence to Replace the Terms Drug Addiction and Drug Habituation.
A. Yes.
Q. And then in that first paragraph, the World Health Organization explains that, in fact, it was going to abandon the use of drug addiction and drug habituation and attempt to describe all those type of drug taking behaviors under the -- with the term drug dependence; is that correct?
A. Yes.
Q. And the World Health Organization explains that it was doing so because of all the confusion about what the term drug addiction meant, correct?
A. Well, let me see. Yeah, because of confusion in the terms addiction and habituation. That's right.
Q. So the explanation that the World Health Organization offered for the change in terminology was because of the confusion being created by the use of

the terms drug addiction and drug habituation?
A. Right.
Q. Nowhere in this document, I don't think, Dr. Benowitz -- if it's there, I would like you to point it out for me -- does the World Health Organization explain that it's altering the

terminology being used because it believed that the criteria that the Surgeon General in '64 had used and that it had used in the past were outdated and inappropriate to use in evaluating drugs of dependence; is that correct?
MS. WHITE: Calls for speculation, lacks foundation, unless you recall the article better than you just testified.
MR. FURR: He's got it. He can look at it.
MS. WHITE: Oh, well, why don't you instruct him to read it? We can have him read it.
THE WITNESS: Yeah, I would like to just read through it before I answer that question.
MR. FURR: Okay.
THE WITNESS: Well, what they in fact say is that --
MR. FURR: Q. Could you just tell me where you are so I can follow with you here?

A. Page nine, section four, first paragraph, that the list of drugs that were abused increased in number and diversity, and this led to attempts to find a term that could be applied to drug abuse generally, and the component in common was dependence, which is psychic or physical, and, therefore, they adopted the term drug dependence to deal with the commonality of drugs of abuse, and I think some of the issues here are things we talked about.
Like, for example, if you looked at amphetamines or cocaine, they might not fit the previous definition of addiction. As a matter of fact, they wouldn't because they didn't have severe withdrawal symptoms in many cases, and yet they were still recognized as serious drugs of abuse.
So I think what this is really saying is they're trying to broaden the definition of drug dependence to deal with its essence, which is really loss of control with drug use, which is the commonality of drug abuse. So I think this does say what I said it said.
Q. Well, nowhere in the document does it say, Dr. Benowitz, that the World Health Organization had now concluded that it was inappropriate to continue requiring the criterion of intoxication and/or severe

withdrawal symptoms, including life threatening symptoms, for a drug being a drug of dependence?
MS. WHITE: Calls for speculation, lack of foundation. He already testified he hasn't read it. He's looking through it here, but he certainly hasn't looked through it to be able to answer the question that nowhere in this document such a thing occurs.
Q. Well, he can look at it between now and trial when I ask him the question again.
MS. WHITE: Good. Why don't we move along, then.
THE WITNESS: I'm not aware in this document, as I read it, that they made the statement that you made about it, but they clearly intended to

describe things differently because they suggest that drug dependence of specific times be used to refer to what was previously called drug addiction.
Q. Okay. And then there's an annex one to this document, correct?
A. Annex one ex-one.
Q. That's what it's labeled as.
MS. WHITE: Page number?
MR. FURR: Q. 13 is where I am, Dr. Benowitz.

A. Yes.
Q. And in annex one, the World Health Organization lists a variety of different types of drug dependence,
A. Yes.
Q. For instance, on page 14, they list drug dependence of cocaine, correct?
A. Yes.
Q. And on page 14, they list dependence of amphetamines.
A. Yes.
Q. But in 1964, the World Health Organization did not list nicotine as a drug of dependence, correct?
A. Correct.
Q. In fact, it wasn't until the 1970's, I believe, that the World Health Organization listed nicotine as a drug of dependence; is that correct?
A. I don't recall the exact date.
Q. Let me ask you another question about the definition in the '88 report, then. As I understood your testimony earlier, you have were suggesting that the criteria accepted in the '88 report were really just a restatement of the principles that the World Health Organization had been using since the change in

terminology; is that correct?
A. Yes.
Q. Let me ask you to turn to page seven of the '88 report. I'm sorry. Do you have your '88 Surgeon General's report with you? John, can I --
A. If there's a line of questioning you're doing now, when we finish it up, grab a sandwich.
Q. I'll tell you, we're very close.
MR. STILL: I don't know if I brought two copies of it.
MR. FURR: One copy's --
MR. STILL: That's all we've got.
MR. FURR: Q. Let me hand you a -- ask you to just look at that document, tell me whether you recognize that from the page from the '88 Surgeon General's report.
A. It is.
Q. See the highlighted language, Dr. Benowitz?
A. Yes.
MS. WHITE: Counsel's referring to page six and seven.
MR. FURR: Q. Would you read that -- I'm referring to page seven. Would you read that for us in the record, please?

A. This line says, "These concepts were used to develop a set of criteria to determine whether tobacco-delivered nicotine is addicting."
Q. Okay. Now, what is stated in the '88 Surgeon General report is that the criteria were selected in a way specific for the evaluation of nicotine; is that correct?
A. Well, that's what this says.
Q. Okay.
A. But, in fact, this criteria were developed as being criteria for drug dependence in general and then applied to nicotine. Criteria were used for that purpose.
Q. Dr. Benowitz World Health Organization has not used the term drug addiction since the change in terminology in '64 or '65, correct?
A. So far as I know.
Q. And the American Psychiatric Association does not use the term addiction, does it?
A. Correct.
Q. And the Surgeon General did not label smoking nicotine as an addictive substance at any time between 1964 and 1988; is that correct?
A. Correct.
Q. Just a few more questions on our line, and we'll take our dinner break. Dr. Benowitz, you've

testified in the past that about 35 percent of smokers make a serious attempt to stop smoking, but only three percent succeed; is that correct?
A. Yes.
Q. Now, that's the success rate for single attempt -- single quit attempts; is that correct?
A. Within that year, yes, that's correct.
Q. In fact, if people engage in multiple quit attempts, their likelihood of success is much higher, isn't it?
A. Yes.
Q. If people engage in multi-quit attempts, their likelihood of success goes up to around 50 percent, doesn't it?
A. Yes.
Q. Dr. Benowitz, is it true that about 50 percent of all adults who stopped smoking don't experience any nicotine withdrawal symptoms?
A. Well, it depends how you define nicotine withdrawal symptoms, you know, how narrow it is. If you're looking at some of the classic ones where people talk about anger, anxiety, sleep disturbance, irritability, there are people that don't experience that. If you look at other things like dysphoria, not feeling right, cravings for cigarettes, things like

that, then it can be substantially higher than that. I don't have an exact percentage, but I think that those numbers underestimate the true occurrence of symptoms that occur because they're more subtle than that.
Q. If -- we touched on this bit earlier, but

Mrs. Whitely really did not exhibit a persistent desire to quit smoking between the years 1972 and 1998, did she?
A. She didn't state it.
Q. And obviously she made only very infrequent quit attempts, correct?
A. Well, it's hard to say. She stated somewhere that she made lots of quit attempts, but they didn't last for more than a few hours, and I'm not sure about the seriousness of those quit attempts or the intent in why she did that. I don't know.
Q. Did you have any sense as to whether Mrs. Whiteley gave up important social occupation or recreational activities because of her smoking?
A. I don't have that information.
Q. Okay. You've explained to us in other cases that one of the components of compulsive use is a continued use of cigarettes in the face of a good -- in the face of a good reason to stop using cigarettes;

is that correct?
A. Yes.
Q. Now, you read Mrs. Whiteley's deposition testimony, correct?
A. Yes.
Q. And Mrs. Whiteley essentially testifies that until the date that she was diagnosed with lung cancer, that she did not believe that there were serious health consequences to smoking cigarettes; is that correct?
A. Well, she knew it was causing her bronchitis to get worse. She knew that much when she quit, but it's true that -- that I guess she didn't believe the cancer business.
Q. Is it fair to say that Mrs. Whiteley did not continue smoking while operating under the belief that she could or was developing significant health problems from her smoking?
A. That's what it appears from her deposition.
Q. Well, that's sort of the end of the line of questioning. If you want to take a dinner break, let's do it.
MS. WHITE: Alrighty.
(The deposition was in recess from 7:05 to 7:39.)

MR. FURR: Q. Dr. Benowitz, let's just lay the groundwork for something here. Obviously, you believe that nicotine is the addictive substance in cigarette smoking, correct?
A. Yes.
Q. But you believe that it is primarily the tar that is related to the carcinogenic effect of cigarette smoke, correct?
A. Yes. There are other carcinogens in the vapor phase, too, but the tar is the major carcinogen.
Q. Let me ask that question this way. You do not believe that nicotine plays any important role in the carcinogenic effect of cigarette smoke, do you?
A. No.
Q. Okay. Given that, would it make sense from a

public health perspective for cigarette manufacturers to produce cigarettes that would yield amounts of nicotine that were acceptable to smokers but with very low tar yields?
A. Yes. What was -- would be acceptable?
Q. Acceptable to consumers.
A. Well -- well, it might reduce the risk. The question is how much. If you had something that was carcinogen free and didn't cause heart disease or lung disease, I have no problem with it.

Q. Let's just talk about it from the cancer perspective first. Obviously, you are familiar with the Premiere and Eclipse cigarettes manufactured by the R.J. Reynolds Tobacco Company, correct?
A. Yes.
Q. Would you agree, Doctor, that those cigarettes produce very low levels of particulate matter?
A. Yes.
Q. Would you agree that those cigarettes reduce by over 90 percent virtually all of the substances that were thought to be carcinogens in cigarette smoke?
A. Well, I'm not sure about all of them, but a lot of them.
Q. You know that that cigarette also yielded an amount of nicotine comparable to the amount that many of the products on the market yield, correct?
A. Yes.
Q. But despite yielding the amount of nicotine that smokers found acceptable in other products, smokers, that is, consumers, rejected Premiere and Eclipse, correct?
A. So far.
Q. Okay. Why is that?

A. I think these -- well, I can't tell you for sure. People who would know for sure would be the RJR marketing people, but it is my sense that the taste was just too different too fast. It didn't -- it was not like the regular cigarettes. It's my understanding, though, that with the Premiere, in fact quite a few employees of R.J. Reynolds began smoking them and kept on smoking them for quite a long time. So people could learn to like them, but it's a matter it's a re-educating taste.
Q. But merely yielding an acceptable level of nicotine was not enough to create consumer acceptance, was it?
A. Well, not that in its -- it's a matter like if it's -- if you're going to change a product, it's a matter of re-educating the tastes, which you can do by gradually changing the product.
Q. By the way, you know that Premiere and Eclipse met a great deal of resistance from certain segments of the public health community, don't you?
A. Uhmm, yes and no. What I think was felt was that these should be dealt with by a regulatory authority, looked at by FDA, sort of the nicotine delivery devices, and I think ultimately products like

that could actually do well if all of tobacco, if all

nicotine delivery products including cigarettes were regulated somehow and FDA were evaluating the safety or lack of safety, I think Premiere and Eclipse would do very well in comparison to cigarettes. But the people who were opposed to Premiere and Eclipse just wanted them to be evaluated some sort of scientific way independently of the industry rather than just having introduced like another cigarette.

Q. They did not want R.J. Reynolds Tobacco Company to be free to market those products as cigarette products, correct?

A. Right.

Q. You don't believe that there was anything wrong or inappropriate about R.J. Reynolds' creation and production of those cigarettes, do you?

A. No.

Q. In fact, you believe that they may be a step in the right direction in the evolution of cigarette design, don't you?

A. Yes.

Q. On the other hand, you've also published a paper suggesting that cigarette manufacturers should produce products with extremely low levels of nicotine but levels of tar that consumers find acceptable from a taste perspective, correct?

A. That's for a different purpose. That's sort of to wean people off of tobacco as a source of nicotine, and if they need nicotine, to also make it available through medications or through some other source of nicotine instead of tobacco smoke. When you burn tobacco, you're going to get a lot of nasty toxins no matter what you do. When you burn anything, you're going to get nasty toxins, and what that approach is sort of wean people off of tobacco as the source, and if they want to use nicotine get them on some other source of nicotine, either that or just have help people just quit altogether. One of those two approaches.

Q. But you know that consumers won't smoke cigarettes with extremely low levels of nicotine, don't you?

A. If you switch them from full nicotine to very low they won't, but if you gradually change it, I'm not sure that's the case.

Q. Ask you a few more questions about cigarette design and cigarette modification by the cigarette manufacturers. Now, you testified in the past about the pH of cigarette smoke and the use of ammonia to adjust the pH and its effect on the level of free nicotine, correct?

A. Yes.

Q. Has the pH of the smoke of cigarettes produced by either R.J. Reynolds or Philip Morris changed significantly over the past 30 years?

A. Well, it's hard to tell. The documents suggest that they might have changed, but I'm not sure

that there's been -- I haven't seen systematic testing of cigarettes the same way over all those years.
Q. You've never tried to -- you've never been able to review that type of data, have you?
A. Not look at cigarette data tested over the years. It's clear that at different points in time, for example, Marlboro -- and what was it? -- Winston or something were much different, and pH's now are different than they were back then, but I'm not sure how much of it had to do with the different testing method. Now, I've not found data where the same method was used to test cigarettes from then to now. So I can't tell you. I can't answer that question.
Q. So you're aware of no data showing any significant change in the pH of cigarettes produced by either R.J. Reynolds or Philip Morris over the past 30 years, are you?
A. Well, I think -- and I have to go back and look at the data -- that Marlboro and whatever the

comparator was, maybe Winston, are closer now than they were back in the sixties or seventies when they were first compared. So I think there's been a change in one or the other, but I can't say which one.
Q. But the changes have been, in fact, narrow band within the range of pH's seen in other commercially available cigarette products, haven't they?
A. Yeah. They're all within the band of commercial products. They are commercial products. They're all within that band.
Q. Okay. Well, that's a fair point. Has the amount of free nicotine in the smoke of cigarettes produced by either R.J. Reynolds or Philip Morris gone up over time?
A. It's hard to stay because without having the accurate pH measurement, I can't tell that.
Q. Does the pH of cigarette smoke correlate with the market sure the cigarettes are able to obtain?
A. That's what R.J. Reynolds thought.
Q. But my question is does it?
A. I don't know.
Q. You know that at one time R.J. Reynolds was interested in investigating that question, don't you?
A. Yes.

Q. And you know that they in fact tried to investigate that question, don't you?
A. Yes.
Q. And do you know what the results of that investigation were?
A. I don't recall.
Q. Okay. Is the amount of free nicotine in the smoke of particular brands correlated with the market share that those brands obtain?
A. I don't know.
Q. Dr. Benowitz, can exercise be addicting?
A. It's back to the same question as overeating. You can have a compulsive exerciser. I wouldn't call it addicting, but it can be a compulsive behavior. It's not a drug addiction for sure.

Q. Exercise is not a drug?
A. Exercise is not a drug.
Q. By the way, you are a physician and essentially a pharmacologist, correct?
A. Yes.
Q. And when you -- my perception is that your view of addiction is essentially from a pharmacological perspective; is that correct?
A. Well, my focus -- my research is that. I think I have an appreciation of the behavioral aspects

as well; although, my focus has been nicotine.
Q. Although they're clearly not drugs, there are a number of behaviors that meet the criteria for addiction utilized by the Surgeon General in 1988, correct?
A. Well, other than the drug part of it.
Q. Other than the drug part.
A. Yes.
Q. And exercise is a good example of that?
A. Uhmm, I suppose if you call it psychoactive, it's psychoactive in a complex way, but I guess if you wanted to say it's psychoactive, some people can be compulsive exercisers. They can be reinforcing, but, again, it's not a drug. It's a compulsive behavior.
Q. With respect to the psychoactivity there's really no question that many people report a change of mood or feeling after exercising, is there?
A. Correct.
Q. Dr. Benowitz, do you have any experience in evaluating the commercial feasibility of cigarette designs?
A. Commercial feasibility?
Q. Yes.
A. No.
Q. Do you know what percentage of the cigarettes

manufactured either by R.J. Reynolds or Philip Morris contained ammoniated, re-constituted tobacco sheath?
A. No.
Q. What evidence do you know of, Dr. Benowitz, that either R.J. Reynolds or Philip Morris actually added ammonia to cigarettes to manipulate the pH and enhance the delivery or availability of free nicotine to the smoker?
A. Well, certainly the R.J. Reynolds documents talk about that a lot with respect to Marlboro. That's what R.J. Reynolds thought. Whatever years it was, sixties or seventies, and there are many documents that talk about that issue, so that's what R.J. Reynolds thought was the reason behind the Marlboro success, and they clearly showed that there were differences in the known levels between Marlboro and whatever the comparator was, and free nicotine was different, and which makes sense because pH was different. My understanding and opinions that ammonia that adding ammonia can increase pH is based on industry documents saying that's what it does, and notwithstanding the interaction with Cathy Ellis that I'm sure you know about where she made cigarettes that said they added pneumonia to it didn't change pH. I

don't know why that didn't change pH when the other

earlier documents said when you add ammonia, it does change pH, but I'm relying on the early documents to say that's what the ammonia does.
Q. Have you ever conducted any experiments to determine whether adding ammonia changes the pH of smoke?
A. No.
Q. Dr. Benowitz, can you identify for me any areas of scientific research about nicotine where the R.J. Reynolds Tobacco Company received knowledge or information that the general scientific community did not also possess contemporaneously?
MS. WHITE: Vague and over broad.
THE WITNESS: Well, my issues were really about some of these cigarette design issues. The ammonia, the pH, the community was sound about those issues at all for a long time in terms of basic pharmacology questions. I can't think of R.J. Reynolds.
I think Philip Morris was doing some research on reinforcing properties of acid aldehyde nicotine combinations, things like that, which would have -- was not known to scientists in general, but I can't specifically think of R.J. Reynolds.
Q. Dr. Benowitz, did you grow up in California?

A. No. Philadelphia area.
Q. When did you first see the frank statement, sir?
A. As part of litigation.
Q. As part of the litigation?
A. Yes.
Q. How old are you?
A. 54.
Q. Had you ever heard of the frank statement before you became involved in cigarette related litigation?
A. No.
Q. Dr. Benowitz, when you're advising your patients to quit smoking, what do you tell them about the importance of being persistent in their efforts to quit smoking?
A. I tell them that it's not going to be easy and that they have to anticipate problems. They have to try to think about what they're going to do when they have urges to smoke, what to do instead of smoking, that if they fail, and we'll talk about it, figure out why, and when you're ready, we'll try again.
Q. You don't tell them to quit trying if they fail, obviously, do you?

A. No.
Q. Even if they fail two or three times, you urge them to keep trying, wouldn't you?
A. Yes.
Q. That's because the likelihood of success will go up with the attempts after the cessation, won't it?

A. Yes.
Q. You told us when we started today that you were prepared to offer opinions about the role that marijuana smoking may have played in the production of Mrs. Whiteley's lung cancer, correct?
A. Yes.
Q. What are your opinions in that regard?
A. Well, that estimates have been that if you look at the carcinogen generation, the tar generation, that the marijuana cigarette, if you smoke the whole thing might be equivalent to smoking five cigarettes. And it's my impression that Whiteley did not smoke joints every day, that she often shared joints with other people, and that if you quantitatively were to look at the contribution even giving a five-to-one ratio, that the impact of all the cigarettes that she smoked would have been just enormously greater than the effect of the marijuana cigarettes. So there's some contribution of marijuana. It would be small

compared to the tobacco impact over the years and that's basically it.
Q. Okay. Let me just try to break that up a little bit. I take it from what you're saying that your opinion is that if taken in sufficient amounts, there's every reason to believe that marijuana smoking can cause lung cancer?
A. Yes.
Q. Because it contains carcinogens, correct?
A. Yes.
Q. They're inhaled into the lungs, correct?
A. Yes.
Q. Now, in order to evaluate the potential role of marijuana smoking in Mrs. Whiteley's lung cancer, what we really need to try to get at is her cumulative dose of marijuana smoke, correct?
A. Yes.
Q. We need to know how long she smoked marijuana.
A. Yes.
Q. We need to know how frequently she smoked marijuana.
A. Yes.
Q. We need to know how intensely or what dose of marijuana she got each time that she smoked marijuana.

A. Yes.
Q. It would be helpful to know the manner in which she smoked marijuana cigarettes.
A. Yes.
Q. We would like to know whether she smoked them by herself, for example.
A. Right.
Q. We'd like to know whether she smoked a complete cigarette instead of sharing it with others.
A. Right.
Q. We would like to know whether she smoked it all the way done to the end of cigarette.
A. Yes.
Q. We'd like to know how deeply she inhaled when she smoked marijuana?

A. Yes.
Q. We would like to know what kind of breath holding she engaged in when she smoked marijuana?
A. Yes.
Q. Because that might affect the -- would affect the retention time. It might affect the absorption time of the carcinogens contained in marijuana smoke, correct?
A. Yes.
MR. FURR: That's all I have,

Dr. Benowitz. Thanks.
THE WITNESS: Okay.
MS. WHITE: Just like to apprise counsel before he passes on to his colleague that we, of course, reserve our right to proceed by hypothetical at trial, and we want to apprise all of you of that fact and give you the time to ask Dr. Benowitz whatever additional questions you would like to ask to cover all your bases.
MR. FURR: I'll pass.
MR. BARRON: I don't know what you mean by that, but I will tell you that this is the time and place for him to offer opinions, and you have withheld certain information from us, and the thought of you trying to insert that information in hypothetical bothers me, if that's what you're intending to suggest, because it would be, in my view, improper, and I think it's improper for you to withhold areas of testimony and deal with it only by way of you call it so-called hypothetical. With that I will --
MS. WHITE: I'm not going to deal with that even -- I don't deal with that kind stuff on the record, and I don't engage in that kind of stuff, Gerry, as you well know. So we'll continue.
MR. FURR: You just did.

MS. WHITE: No. No.
MR. BARRON: She sure did. She brought it --
MS. WHITE: I don't try to admonish you or tell you what you did or didn't do, all right, and so just let's go on.
MR. BARRON: Well, I think we made each other's position relatively clear, so we don't need to go on on that. Let me slide over, if I could. Do you mind?
MS. WHITE: Yeah, because we're all having hearing problems here. Get the questioner across from the witness, and we'll cut down some of the acoustic difficulty.

EXAMINATION BY MR. BARRON

MR. BARRON: Q. Good evening, Dr. Benowitz. My name is Gerry Barron. I represent defendant Philip Morris, Incorporated.
Are you feeling well enough and alert enough to proceed?
A. I am fine. Thank you.
Q. Okay. The reason I ask you is that it is past the normal working day. We actually I think are doing this at your request, continuing with it this

evening, but I want to make sure that if we do so, you are going to give me the best and most accurate answers that you possibly could and would not suggest that you're giving weaker answers because of the hour of the day.

So do you feel that you are comfortable that you're going to be giving your best and most accurate testimony even though it's past the normal working hour?

A. I'm quite comfortable about that.

Q. Okay. And if at any time you feel that that's not happening, since you realize that we can't read your mind, you'll let us know. We'll just figure out what we have to do, recess for a period, or deal with it in some other way.

MS. WHITE: We can assume a little bit higher level of both cooperation and certainly perception as to his ability to continue. He's an expert who has testified many times, and the hour is late because of defense questioning. Let's proceed

MR. BARRON: Q. Did you have my question still in mind with all that she just said?

A. Yes.

Q. Can you answer my question?

A. Yes. I'm fine, and if I have any problems, I'll let you know.

Q. Okay. You mentioned that Ms. Whiteley did not smoke marijuana every day. What is all the information upon which you base that comment?

A. I was told by Ms. Chaber that she did not smoke every day, that she shared cigarettes with other people, and that was really -- I got no more specifics than that.

Q. Was this information that Ms. Chaber volunteered to you as opposed to you asking her for the information?

A. I think it came up when she said that this might be -- that I might be asked about the contribution of marijuana to her lung cancer, and so I said, "Well, how much marijuana did she smoke?" And that's what she told me.

Q. Did you feel that Ms. Chaber's was a full and complete answer to your inquiry?

A. Well, there were not full details. She just told me what her impression was, and I assume that fuller details will be forthcoming.

Q. Why did you assume that fuller details would be forthcoming, and when you did you anticipate the fuller details would forthcome?

A. I assumed that at some point in time I would be asked if a person is exposed to this many marijuana

cigarettes and this many tobacco cigarettes in a certain way, what do I think the relative contributions might be, and that someone would provide me with those assumptions to make.

Q. Is that what she suggested would happen, or did you just assume that from the fact that your

question was not fully and completely answered by Ms. Chaber?
A. Well, I'm assuming that what she told me was accurate or will be found to be accurate. The reason I assumed that is because I didn't see that in any of the documents from Ms. Whiteley. And so, of course, this would have to be established as factual by Ms. Whiteley or someone else. So I am assuming that those numbers will be confirmed, and then since I didn't read it myself, I sort of have to go on the assumption that this is what she smoked, and that's what I said.
Q. You asked Ms. Chaber how much did Ms. Whiteley smoke since you realize you were going to be asked to assess the contribution, if any, of marijuana to the development of Ms. Whiteley's lung cancer, correct?
A. Yes.
Q. And you wanted information that was available

on this subject in order -- you, fairly, as an expert would have that available to you to in order to come up with a fair and reasonable opinion, correct?
A. Yes.
Q. And so you asked the question of Ms. Chaber, correct?
A. Yes.
Q. Did you assume that Ms. Chaber was giving you all the information she had at the time, or did you assume she was giving you only part of the information she had?
A. I assumed she was giving me what she had.
Q. And withholding nothing?
A. Correct.
Q. When did you ask this question?
A. Monday evening is when I met her prior to my deposition now. I was out of town for the past couple of days, and I couldn't meet with her in closer proximity to this than last Monday night.
Q. Talking about this Monday?
A. This Monday.
Q. November 15th?
A. Yes.
Q. And although you assumed Ms. Chaber was giving you all the information that she had, did you

actually ask her, Ms. Chaber, is that all the information you have?
A. I don't think so.
Q. You assumed from the fact that you were being asked to develop an opinion and the fact that you were not going to develop an opinion as an adversary or advocate but as an expert, that she would be fair with you and give you whatever information she had that was relevant to that subject in order that you would come up with your best opinion, correct?
A. Yes.
Q. And specifically the totality of the information she provided to you last Monday evening, November 15th, which is what you assumed was all she had, was what again, please?

A. She smoked for whatever, 10 years. She didn't smoke every day. She shared her joints with other people.
Q. So she did confirm that Ms. Whiteley had smoked marijuana for a period of 10 years?
A. I'm not sure she said 10 years, but for some period of time.
Q. That's what you just said. Now do you want to retract that?
A. I don't really recall what she said in terms

of the number of years. I took the 10 years from what was in the medical records.
Q. See, I'm trying to distinguish now specifically what Ms. Chaber told you.
A. I don't really recall if she told me any number of years. She just said when she was younger, and was years ago, and she stopped quite a long time ago.
Q. When you had this conversation with Ms. Chaber this Monday evening or Monday day, rather, November 15th, did you know when Ms. Whitely started to smoke marijuana for the first time?
A. The only information I had about that were from the records. I don't think Ms. Chaber said anything about that.
Q. And what was your understanding from what you call the records as to when Ms. Whiteley first started smoking marijuana in her life?
A. Well, the records suggest she used it for about 10 years and stopped when she was 28 years old. So I would assume she started when she was about 18.
Q. Now, Ms. Chaber told you that Ms. Whitely did not smoke every day. Did Ms. Chaber tell you what information, if any, she had more specific than that? In other words, how often during a week or a month or

period of time, a period of time during whatever period it was that Ms. Whiteley smoked that she smoked marijuana?
A. I don't recall exactly what Ms. Chaber said. I think, you know, couple or three times a week or something. I don't really remember exactly, but it was something that was not daily use.
Q. And Ms. Chaber did not suggest to you how many marijuana cigarettes were smoked on an occasion where a couple or three times a week marijuana was smoked by Ms. Whiteley?
A. I don't recall that. I just recall that the cigarettes were shared often with somebody else.
Q. Did Ms. -- excuse me. Did you ask Ms. Chaber whether she had any information beyond that which she was telling you about?
A. I don't recall. I think I just -- I would normally have expected her to tell me what she knew. So I'm not sure I would have asked her or not. I don't remember specifically.
Q. Did you assume from what Ms. Chaber said that on every occasion Ms. Whitely smoked marijuana she smoked it on occasions with others where she would share it with others and therefore not have the entire

cigarette herself?

A. It was my impression that that was the case.
Q. How deeply did Ms. Whiteley inhale marijuana smoke when she did?
A. I don't know, but most people inhale marijuana deeply and hold it in. It's a pretty characteristic way of smoking marijuana.
Q. It would be surprising and at first blush potentially incredible if, in fact, Ms. Whiteley suggested she did not breathe deeply and hold it in if she had been a smoker of marijuana over a 10-year period, correct?
MS. WHITE: That calls for speculation.
THE WITNESS: Well, that's the way marijuana normally smoke I would expect that's how she smoke it.
MR. BARRON: Q. So what I said was correct?
A. It would have been surprising.
MS. WHITE: Same objection.
THE WITNESS: It would be surprising, yes.
MR. BARRON: Q. At any time during the conversation or thereafter did you ever consider it at all surprising or unusual that Ms. Chaber, being the rather thorough lawyer that you know her to be, did not by this time have more specific information on

her client's history of smoking marijuana than she offered to you?
MS. WHITE: That's an improper question, and counsel knows it. We're not going to engage in that kind of questioning here tonight. If you have a problem with Ms. Chaber's ethical conduct, then you have alternate routes to take up such a concern, but you're not going do it through this witness. Now let's move along.
MR. FURR: It's not a question of ethics.
MS. WHITE: We're not entertaining that. If we have to stop we're right here and get a ruling here on it, we'll stop right now, but we're not going to do that.
MR. FURR: Q. Was it surprising to you that more information was not available by November 15th concerning the details of Ms. Whiteley's history of smoking marijuana?
A. I really didn't know what the history of this case was in terms of what was coming at what point in time. I had no thoughts about that one way or the other.
Q. Well, as a matter of fact, hadn't you been sent a declaration concerning the issue of marijuana

and whether it had any causative potential role in the development of lung cancer when you received a copy of a declaration of Dr. Klein?
A. Uhmm, I received --
Q. And, in fact, Counsel's looking at the copy that has a fax date sheet on it I believe of October

27. You want to look at her copy that she's looking at?
A. Yes. No. I saw this.
Q. Did you see it on or about October 27th?
A. When it was faxed to me, sure. Yes, it was faxed to me on October 27. So I would have seen it that day or the following day.
Q. And, actually, you were consulted on whether or not the declaration seemed to make sense and whether in effect it would support a conclusion that marijuana on occasions might be a factor in causing lung cancer, correct?
A. Yes.
Q. So by October 27th, both you and plaintiffs' office realized that it was an issue, correct?
A. Yes.
Q. So, again, was it not surprising to you that by November 15th, there was no more specific information available concerning the details of the

history of Ms. Whiteley's marijuana smoking than that which was provided to you at that time?
MS. WHITE: Well, that's calls for speculation by Dr. Benowitz since he's not involved in the management or prosecution of this case but is called in for specific purpose here, but go ahead.
THE WITNESS: I wouldn't say surprised or not. I didn't have any feeling one way or the other. I just asked her what was known about it, and I just took what she said, or I wasn't surprised or not surprised.
MR. BARRON: Q. But what she provided lacked a lot of details, did it not?
A. Yes, and it was my impression that something would be done at some time to provide more details about it. I guess it was not available from the client. I don't know.
Q. That's kind of where I was going next. You assumed that for some reason the information was not available from the client?
A. It certainly was not available.
Q. Meaning Ms. Whiteley?
A. Meaning Ms. Whiteley in her deposition that I read, and there were not enough details in other depositions. So I assumed at some point in time

someone is going to go back and ask her specifically about it, and it hasn't been done yet.
Q. Are you aware that specific written questions called interrogatories were served on plaintiffs' counsel for the response by Ms. Whiteley and that those interrogatories dealt -- Set 2 -- with specific questions dealing with the history of Ms. Whiteley's marijuana use?
A. No. I saw the first set, which dealt with tobacco use, but I did not see a second set. I was not aware of that, that they were sent or whatever.
Q. Are you aware that that set has been answered by Ms. Whiteley and signed by her?
A. No, I have not seen those.
Q. And so whatever information was gathered by

plaintiffs' counsel in an effort to respond to those written questions whether the information was provided or not in response to them has not in effect been passed on to you yet by plaintiff's counsel, correct?
A. That is correct.
MS. WHITE: And for the record those interrogatories were served yesterday or today, and Dr. Benowitz is meeting with Madelyn, for instance, he just testified was Monday, correct?
THE WITNESS: Yes.

MS. WHITE: All right. So we're clear.
MR. BARRON: Q. So specifically what information, then, are you going to be looking for further from plaintiffs' counsel that might be delivered to you that you would like to have in evaluating this issue, whether it be delivered to you before you take the stand or delivered to you in some sort of a hypothetical way as suggested by counsel might happen?
MS. WHITE: Specific to marijuana use now?
MR. FURR: Yes.
MS. WHITE: Okay.
THE WITNESS: As we talked about before, I'd like to get enough information to get an idea of cumulative dose as to how many cigarettes she smoked in a week, how much of the cigarettes she smoked herself, how long she did it for.
MR. BARRON: Q. And do you have in mind a threshold of cumulative dose for enough that would, in your opinion, constitute a significant factor in the development of her lung cancer?
A. Well, I think one would look at the proportion because the smoke from marijuana is very similar in toxic constituents to smoke from tobacco.

Some things are different. It doesn't have some of the nicotine derived nitrosamines which are thought to be a significant contributor to cigarette smoking related cancer, but it certainly has the polycyclic hydrocarbons and a lot of the other carcinogens. So I would just try to get some sense of a number of cigarettes, marijuana joint or equivalent she smoked, give that a factor of five versus cigarettes, try to figure out a total dose load in a sense, and then look at a fraction of that compared to her cigarette dose load, which we have some idea of being somewhere around 25 or so pack years.
Q. Before you were notified that there was an issue concerning Ms. Whiteley and marijuana smoking and any role it had to play in the development of her lung cancer, to what extent, if at all, did you consider yourself to be a person that held any special expertise in the cancer causing potential of marijuana smoking?
A. Well, I have actually done a lot of research and a lot of testing on marijuana over the years. I published a bunch of papers. I was a consultant for the California research advisory panel when the State of California sponsored marijuana for cancer patients.

I was the person who went around and educated the

physicians about what marijuana was and what it did, what its toxicity was. So I spent a fair amount of time lecturing and teaching about marijuana.
Q. Did you advise them and warn them about the cancer causing potential?
A. Well, I explained the fact that there are the same carcinogens in marijuana smoke as cigarettes. Now, again, it's a dose issue so that it's hard to imagine except in extraordinary cases that you would have someone who would come close at all to smoking marijuana the sort of carcinogen load if you got a person who smokes cigarettes for 20 years, but in theory, there is some carcinogen exposure, and so I did talk about that.
Q. The amount of carcinogens in a marijuana cigarette, in your view, is approximately equal to the amount of carcinogens in a cigarette?
A. Well, it's hard to know for sure, but a factor of five to one has been proposed by people, including Dr. Tashkin, who I think is expert for you. Marijuana cigarette is not filtered. It's a cruder product. So it's hard to get an exact dose estimate. It doesn't have some carcinogens I can mention, some nitrosamines, like the cigarette. Sort of a rough estimate. I think a five to one is probably a

conservative estimate. So I was planning to use a five to one ratio saying one marijuana joint if smoked entirely would give the same carcinogen load as five cigarettes from tobacco.
Q. But in terms of the marijuana leaf itself, if you took the same weight of the marijuana leaf and compared it with the same weight of tobacco, would each have the equal amount of carcinogens?
A. Well, it has to do with the combustion of it. Cigarettes also have filters.
Q. I want to get to that. I want to reach your understanding, if I can, of --
A. I think if you took tobacco leaf, not re-constituted tobacco with stems and stuff, but just plain tobacco leaf and marijuana leaf, and you combusted the same weight of those, you would probably get the same general carcinogen profile with the exception of the nitrosamines that are not present in tobacco -- in marijuana.
Q. Is there anything in the marijuana leaf that has a cancer causing potential that the tobacco leaf does not when burned?
A. Not that I'm aware of.
Q. And by that, I'm including in my question anything in the marijuana leaf that tends to amplify

in any way any carcinogenic effect of some other carcinogen in the leaf compared to the tobacco leaf.
A. I'm not aware of that.
Q. What people nationally do you recognize as those with the greatest deal of respect and recognition in expertise in the field of the cancer

causing potential of marijuana?
A. Well, I think as mentioned before the person who has really done most of the work on the respiratory effects are Dr. Tashkin from UCLA.
Q. Do you know him?
A. Yes.
Q. Do you find him to be in situations where you've dealt with him and have evaluated him a straightforward honest person?
A. Yes, as far as I know.
Q. Competent?
A. So far as I know, yes.
Q. So have you then in order to reach this opinion concerning the lack of a significant role of marijuana actually tried to come up with a number of marijuana cigarettes smoked either in total or in part by Ms. Whiteley or the dose or doses of marijuana that she smoked for the period that she engaged in that activity?

A. Not in a formal way because I didn't have specific enough information, but if I'm assuming that she's smoking one joint every other day, say that might be equivalent to smoking two or three cigarettes per day for 10 years, and that in comparison with a pack a day of regular cigarettes makes that percentage 10 percent or less of equivalent exposure.
Q. So you would view that as being a contributing factor, that marijuana smoking, but not as significant a contributing factor as cigarette smoking?
A. It could be, yes.
Q. Both would be in your mind a significant factor given that understanding of the smoking in causing the lung cancer, just that you would rate the cigarette smoking as being of greater significance?
A. Yes.
Q. And, therefore, again, if your understanding was correct, both would be a cause of the development of the lung cancer; both would contribute to it. It's just that smoking would be, in your view, a greater cause or a greater contribution, smoking tobacco?
A. A much greater cause, yes.
Q. Have you done a calculation for what you believe to be the number of tobacco cigarettes smoked

by Ms. Whiteley?
A. No. There are estimates that vary from I think 25 to 30, something from various people who have gone through those calculations. I've not done that. I'm assuming the lower limit just for a conservative estimate, you know. I certainly could go through and try to calculate that myself. I've not done that yet.
Q. You understand that the amount of cigarettes smoked by Ms. Whiteley as reflected by her sworn responses to written questions has changed with time and been amended, correct?
A. I'm not sure what you mean.
Q. Well, you have it right before you in material that you brought to the deposition. You have a set of original answers by Ms. Whiteley to written

questions that dealt with her smoking history, and then you have an amended answer.
MS. WHITE: Actually, Counsel, we don't. Maybe we can he could get them back.
MS. MOORE: Everything was put right up there.
MS. WHITE: What did you do with the stack?
MS. MOORE: Right here.
MS. WHITE: These are the depositions.

Oh, is that it?
MR. FURR: Counsel is helping there, and she'll show you the first.
MS. WHITE: Set 1.
MR. BARRON: Set 1, originally answered question number 23, and then during Ms. Whiteley's deposition, an amended set was provided with an amended answer to question number 23.
A. I think I've got notes extracted from those.
Q. So you've kind of -- what did we used to call it in math? -- interpolated between the two, or did you accept one version over another, or how did you work up your thoughts on what her smoking history was?
A. This is -- the first one I didn't interpolate because they weren't very much different in terms of the amount thing. There's some difference in the terms which cigarettes were smoked, when -- but the amounts were pretty much the same I think in the first answer and the second answer.
Q. What about Ms. Whiteley's deposition; did her testimony in that regard vary from the written answers that were served to the written questions?
A. Well, some of the years varied a little bit. One case she said she smoked Camels in the eighties, and another case she smoked Camels starting in '75.

Q. Did her testimony also vary as to whether she had knowledge of how much she smoked in particular years meaning smoking tobacco cigarettes?
A. I didn't really look at it carefully in that regard. I can't answer that. I don't know.
Q. So what you did was accept the presentation made in one of the sets of written answers to written questions?
MS. WHITE: I think that misstates his testimony, but --
MR. BARRON: I'm trying to find out what his testimony is.
MS. WHITE: I understand.
THE WITNESS: Well, yes. The first sets of interrogatories had her smoking between one half and a pack per day for about seven years, and smoking a pack to a pack and a half per day for the next 19 or 20 years.
MR. BARRON: Q. And that's what you've been working off of in developing your opinions?
A. Yes, and those are similar to the pack year estimates that some of the doctors recorded in some of their notes as well.

Q. Do you have an opinion as to by what time,

meaning either in year or age, it was that Ms. Whiteley first became addicted to any extent on tobacco cigarettes?

A. It seems to have occurred while she was still 14 or 15 years old. She was smoking five to ten cigarettes per day. By that age I think she was addicted by then.

Q. I'm sorry. By you say 14 or 15?

A. Yes.

Q. And you arrive at that conclusion based on what?

A. Well, she was a daily smoker at that time. She was -- she was smoking at home by age 15, and just in general when you look at adolescent -- smoking adolescents for any given level of cigarette consumption smoking on a daily basis tend to be on a an addiction trajectory. That's going to lead them to a more highly addicted level. So I felt when that adolescent really begins smoking on a regular basis, daily, especially if they start smoking by themselves, not socially, but smoking when no one else is around, that that's evidence of addiction, and that usually progresses. It certainly in her case she progressed and increased from five to ten per day to about a pack per day by the time she finished high school.

Q. And bear with me, if you will, because I want to understand what you're saying here. Is the number of cigarettes smoked per day by Ms. Whiteley a basis of your opinion that she was addicted by age 14 or 15?

A. Well, it's more daily smoking.

Q. So I'm not asking --

MS. WHITE: Did you finish?

MR. FURR: Q. I'm not asking whether it's more. If you're able to answer my question yes or no, could you just so I understand, and then I'll be happy to allow you to explain it in any way you like. Just not clear whether the number of cigarettes smoked four to five is a basis for your opinion that she Ms. Whiteley was addicted by age 14 or 15 --

A. Yes.

Q. -- to some degree in smoking?

A. Yes, but more importantly that was every day.

Q. If she had been smoking every day at age 14 or 15 but only one cigarette a day, would your answer remain the same, that she was addicted?

A. Yes. I think a lot of kids by the time they smoke daily, every day, even one cigarette a day, now people don't usually smoke one cigarette a day, though, or if they did, it's a very transient phase,

but yes.

Q. So is there anything else upon which you base your opinion that Ms. Whiteley was addicted to smoking cigarettes made of tobacco by age 14 or 15 other than the fact that by that age she smoked those on a daily basis?

A. No. That's all I have at that time.
Q. And do you have what you believe is a reasonably reliable set of categories of addiction so that, for example, mild, moderate, extreme, or anything like that is used by you?
A. Well, it's not strictly quantitative in a sense. I can't give you -- this is a specific criterion for being highly addicted versus moderately addicted, but I think there is a general quantitative relationship. So, for example, if someone is smoking five cigarettes a day as an adult -- start with adults because that's simpler -- that person is likely to be less highly addicted than someone who is smoking 20 cigarettes a day.

Someone who is smoking not every day, it might not be addicted at all. Someone who just smokes occasionally, smokes one day, skips a day, you know, a lot of those people are what are thought of as non-addictive smokers.

So I think there are some ways to sort of sort out how highly addicted someone is, but I can't give you specific criteria for this is high addiction and this is medium addiction, but I certainly think someone who is smoking a pack a day of cigarettes and smokes it for 20 years is a high likelihood of being highly addicted. Now, for kids, they have addicted behavior at fewer cigarettes because they tend to be escalating. And I say it's not a stable smoking pattern. For example, adult who is smoking a cigarette per day might or might not be addicted, and if they're addicted it would be very low level of addiction. In kids when they're smoking a cigarette per day, that's usually unstable stage where they are escalating their smoking.

So it's a good predictor if they're not addicted yet they're going to be addicted soon for most kids. I think by the time a kid at age 14 or 15 with all the obstacles to smoking that a kid has who is smoking five or ten cigarettes per day, there's a high likelihood that she was addicted at that time.

Q. So when you say it's highly likely that if an adult is smoking 20 or more cigarettes a day that that adult is highly addicted --
A. Yes.

Q. -- can you give me what your opinion is as to what percentage of such adults are highly addicted and what percentage are not?
A. Well, the vast majority.
Q. What do you mean by that?
A. I can't give you a number, but --
Q. Well, can you do the best you can because you're the expert, and if you can't, then maybe nobody can.
A. Well, 90 percent.
Q. And how do you rate or categorize the approximate ten percent of those adults who smoked 20 or more who are not as you call it, quote, highly addicted?
A. Well, there are some people, for example, not

very many, but some people who smoke a pack per day and don't inhale their cigarette. They don't take in much nicotine. There are some people who are fortunate and can go from a pack a day and then just stop.
Q. May I interrupt for a second because my word used maybe was ambiguous when I said "how." I meant what type of category do you place them in, the rest of the 90 percent you call quote highly addicted?
MS. WHITE: So what does he call the ten

percent?
MR. BARRON: Yeah, what do you call the ten percent? Are they all in one category under your nomenclature, or are they under a variety of nomenclatures or what?
A. They could be different category.
Q. Well, what do you call them?
A. I don't call them anything specifically. I think you have to look at those individuals for what they would be like.
Q. So there's two divisions of --
MS. WHITE: Let him finish his answer. Go on. It's all right.
THE WITNESS: I gave you some examples. There are people who for whatever reason smoke a pack a day and don't inhale. Those people clearly are not addicted on the nicotine.
MR. BARRON: Q. Okay. What portion of the ten percent do you believe they constitute?
A. I don't know. One percent, two percent. I'm not sure, but I know we've studied people like that, and it's amazing to me that people spent so much money on cigarettes and don't inhale them. There are people -- and I don't think what -- I don't know what percentage who can smoke a pack per day and then just

quit with no problems at all. We don't understand why that happens. They're very fortunate, those people. They're not very addicted by the criteria that it's hard to quit.
Q. Okay. Let me see if I understand this, then. If you, Dr. Benowitz, look at the entire population of adult smokers who smoke 20 or more cigarettes, you can break them down as you have just now so that 90 percent you would opine are, quote, highly addicted, close quote, ten percent are not. These are approximate numbers, I know. Of that ten percent, two percent who don't inhale, are they addicted at all?
A. No.
Q. Okay. Then you have the remaining approximate eight percent. Are they addicted at all, and if so, what nomenclature do you use for that eight percent?
A. Well, some are less highly addicted. Some are lightly addicted. I can't give percentages for that, but there's a lot of variability in terms of how much nicotine people take in per cigarette in terms of the individual response to nicotine, bunch of factors. I --
Q. So of the eight percent, how many or what

percentage of that eight percent do you lump into the category of less highly addicted, and what percent do you lump into the category of lightly addicted?

A. All this is very highly, you know, guessing. You know, I have no specific numbers for any of these things. Even the cut of 90 percent is not based on studies that I can cite you. It's just my best guess, and I can't even give you an estimate. You know, it was of those eight percent in terms of what number falls in what category, I've not looked at data like that. I haven't seen that. All I can say is that there are some people who smoke 20 cigarettes per day who seem to have no problems not smoking, and some are less highly addicted than others.

Q. Okay. So I'm going to set aside the roughly two percent who you have told me about who don't inhale and who are not addicted at all and ask you as to the two percent, even though you categorize them as not addicted, do they have any difficulty weaning themselves from the practice or moving away from the practice if they develop that desire to do so?

A. That group has never been specifically studied.

Q. So you don't know?

A. I know those people --

MS. WHITE: Gerry, let him finish.

THE WITNESS: -- exist because we have measured nicotine levels in a lot of smokers, and we occasionally find someone who smokes and doesn't take in much nicotine. So that's why I know they exist, but I don't know anything about their behavior in terms of quitting smoking.

MR. BARRON: Q. What do you mean about the behavior of that roughly eight percent and their ability or practice of quitting smoking when they make the attempt?

A. Well, again, the reason that came up, that eight percent, is that those are the people who seem to be able to quit more easily or without difficulty at all. So they are much less highly addicted.

Q. So those people are people who always are able to quit?

A. Able to quit much more easily than the rest,

Q. Always able to quit?

A. Well, I would assume so if they --

Q. I do, too. I just want the make sure that your English is the same as mine.

MS. WHITE: Well, it would help if we get a clear record and we won't -- if you keep stepping on his answers. Let him finish.

THE WITNESS: Well, if they try to quit, I

would assume that these are people who when they try to quit can quit without much difficulty. That's how I would define it.

MR. BARRON: Q. And so you define the highly addicted as people who are not able to quit without much difficulty?

A. Highly addicted people have difficulty quitting.
Q. They are not able to quit without much difficulty?
A. The way you're stating it is confusing because you could read it two ways. What I'm saying is that they have difficulty quitting. That's the most direct way to say it.
Q. But, in fact, most if not all of that 90 percent have the ability to quit even though it might be difficult, correct?
A. Yes.
Q. Do any of that 90 percent have, in your opinion, absolutely no ability to ever quit?
A. There are some people who don't seem to be able to quit, and those are the ones where the public health community has been talking about things like nicotine maintenance to give them alternative to tobacco.

Q. You certainly put Ms. Whiteley in that category, would you, from all you know about her case?
A. No. She quit ultimately.
Q. So we have of this 90 percent a precious few who the public health people are thinking about a maintenance program for the rest who are able to quit but just cannot do so without a lot of difficulty, and the amount of the difficulty varies?
A. Yes.
Q. Correct?
A. Yes.
Q. And so are all members of that 90 percent group who have the ability to quit but just with some measure of difficulty all alike, or do they vary in how difficult it is for them?
A. Smokers vary a lot.
Q. And so when you start often taking a look at an individual like Ms. Whiteley, you got to figure out in the first place whether she belongs in the two percent of people who don't inhale, the roughly eight percent of adults who inhale and smoke 20 or more cigarettes of tobacco a day but are able to quit without much difficulty, or whether she belongs in this 90 percent of what you call, quote, highly addicted, close quote, people, correct?

A. Yes.
Q. And so you were able to determine in her case that she inhaled. So she's not a member of the two percent, correct?
A. Yes.
Q. And then you have to decide well, does she belong in the eight percent or the 90 percent, correct?
A. Yes.
Q. And would you have been able to place her in either the eight percent or the 90 percent if she had never tried to make a serious attempt to quit at all?
A. It would be difficult. You would basically have to say a probability, there's a 90 percent chance that she would, but without having tried to quit, you

wouldn't know for sure. I think there are some aspects of her smoking behavior, though, that make you think that she's highly addicted. Things like smoking a cigarette as soon as she wakes up in the morning, smoking when she is sick, having to leave a room where no smoking is allowed in order to get cigarettes. I mean, there's some behaviors that she has that strongly point to a highly addicted person.

Q. Where did you find any evidence that she left a room?

A. Someone asked a question. Some -- let's see.

Q. Is there any water?

MS. MOORE: I believe there may be.

MR. BARRON: Is there any water? Can we get water somewhere?

MS. MOORE: I'll go. Both --

MS. WHITE: In the kitchen. Want to take a break?

MR. BARRON: No, it's okay.

THE WITNESS: I guess we're not getting any dinner or anything.

MS. WHITE: Didn't I call an hour and a half ago? I thought maybe the door was locked, but the door's wide open out there.

THE WITNESS: There was a statement in her deposition that said something like when smoking was prohibited, she would go to where smoking was permitted. That was just before she said she would smoke if she had a cold or a flu, and just before -- she said she smoked all the way to the hospital during a pregnancy. So I think there are a lot of things in her history that are indicators that she was highly addicted.

Q. Where did she indicate that she indicated that she smoked her first cigarette upon wakening?

A. Also part of her deposition. She said she had her first cigarette as soon as she woke up.

Q. Now, as a practicing medical doctor, you're dealing with patients who come in with various complaints that they might have, or come in with conditions that you discover and want to find out more about, there are times when you have to ask the patient questions about, for example, their history, correct?

A. Yes.

Q. And as a medical doctor, except in the rarest of occasions, you tend to accept what your patients are telling you, correct?

A. Generally.

Q. Because in that setting, you think that they're going to want to be truthful and forthcoming to you in order that you are provided with the most accurate information so that you can best do your job, correct?

A. Yes.

Q. Do you believe that the motivation for completeness and accuracy is the same when a person is involved in a lawsuit and gives responses to questions in that setting, for example, in a deposition or in

response to written questions?

MS. WHITE: Well, I need to make an objection here then. What you're asking him in a great many respects calls for a legal conclusion. You neglected to mention that both of the circumstances you're asking him to opine on require a person to take an oath to tell the truth under penalty of perjury, making quite a difference in the character of your question.

MR. BARRON: That's quite a long objection.

MS. WHITE: Well, entirely proper considering the very improper question

MR. BARRON: Q. I'm going to encourage you just to make a legal objection. So do you need the question reread so you can answer it?

A. No. I think there's -- it's obvious that there would be a motive to make a positive case for yourself. The question is whether an individual will lie or not, and I can't say anything about this individual. Some people probably do; some people don't.

Q. And it's not always just a matter of outright lying. It can be that subconsciously motivational factors in the lawsuit work their way so that the -- excuse me -- the person winds up having a memory

somewhat skewed by those factors without really necessarily developing false testimony?

MS. WHITE: It's a totally improper line of questioning. You're not going to engage in it. Shut it down before, and I'll shut it down now. This is not why he's here, and we're simply not going to get into it. I know you would like to make our client out to be a liar. You're going to have to do it some other way. Dr. Benowitz is not available to answer those questions and, again, you're welcome to make a motion the compel. I welcome the opportunity to take it up to the discovery commissioner. So don't answer those questions, and I am instructing you now as my agent.

MR. FURR: He's not your agent.

MS. WHITE: He's always been my agent. He's our expert, in case you forgot

MR. BARRON: Q. Doctor, do you look upon yourself as an agent in this matter?

A. No.

Q. Okay. Would you please answer my question?

MS. WHITE: No, he will not. He's not available. He is our expert. We have disclosed his area of expertise, and this is not -- I'm not engaging in this improper line of questioning. You're welcome

to certify the questions.

MR. FURR: Q. Are you declining to answer, Doctor?

A. Yes.

Q. Did you see any instances of what appeared to be contradictions between what Ms. Whiteley stated in

her deposition and what others stated on the same subject, such as family members?
A. There were some differences I think I mentioned before. Actually, I'm not -- what I saw before was a difference in report from her husband and her sister in terms of the alcohol use. I didn't really note or compare what Leslie Whiteley said in her deposition to what the family said I have to go back and compare to, but nothing jumps out of my memory.
Q. Part of what you looked at in this case were medical records concerning Ms. Whiteley, correct?
A. Yes.
Q. Did you ask for those, or were they provided without asking to you?
A. What I generally ask for is records in which there might be some reference to her smoking, because I was asked to make a comment about her level of nicotine addiction or smoking behavior, and one thing

that's useful is to see are there times when physicians have recorded the history of smoking and advise or helped or something else the person to stop smoking.
So I always ask for any records in which this information could be found, and that's what they sent. Most of it was not relevant. Most cases it didn't have any of that information in it, and I was not looking at this case from a medical causation point of view. I assumed she had cancer. Kind of cancer she had is certainly consistent with cigarette smoking, but I wasn't specifically looking at the details of it.
Q. So you assumed it was from cigarette smoking, meaning tobacco cigarette smoking, correct?
A. Yes.
Q. And then later on you were asked to evaluate whether there was contribution by anything else, such as marijuana, correct?
A. Yes.
Q. And were you provided more records at that time?
A. No.
Q. Did you assume that the records that you had received were complete and thorough on that issue,

meaning the history of marijuana smoking?
A. Yes. I didn't see any other information on marijuana smoking there I assumed that they were complete. I don't know if there are other records available or not.
Q. Since you recognize that cocaine use can have a causative role in certain circumstances of the development of lung cancer, did you also assume that the records you had received were complete and accurate concerning any history of that usage by Ms. Whiteley?
A. Well, I don't know that cocaine use is associated with lung cancer independent of cigarette smoking.
Q. What do you mean by independently of it?

A. Well, most cocaine users are cigarette smokers, and they get their cancer from the cigarette smoke, but I'm not aware that cocaine use is a factor in cancer.
Q. Of any type?
A. Of any type.
MS. WHITE: I know. Sorry. Do you want me to pop some more popcorn?
MR. BARRON: I guess we're not getting anything.

MS. WHITE: I don't know what to think. They're just not here.
MR. BARRON: Can we go off the record?
(Discussion off the record.)
MR. BARRON: Q. So you don't have a belief that smoking crack or crank MAY also cause lung cancer.
A. I've never seen evidence of that.
Q. And you have no information or evidence that even suggests that?
A. That's correct.
Q. Are you aware that one of Ms. Whiteley's treating physicians, a pulmonologist, has had his deposition taken in this case?
A. No.
Q. Down a Dr. Thomas Brugman, B-r-u-g-m-a-n?
A. I read -- what did I read? No, I saw his medical records, but I don't know him.
Q. Is there anything, as you understand it at all, unusual or surprising about a woman developing lung cancer like Ms. Whiteley did at the age of 38?
A. Well, it's young, but certainly when you -- when people develop either lung cancer or heart disease or things like that at a young age, it's usually because they're smokers. There's some factor

that accelerates it, but it's younger than most.
Q. Even in someone who is a regular smoker, is it surprising, unusual, that one develops cancer at the age of 38?
A. Yes. It's in -- with smokers, the risk still accelerates greatly with age, and it's unusual to get lung cancer under 40 years old, even a smoker.
Q. When one does get cancer under 40 years old, it leads to the question of whether there are other risk factors that caused or contributed to the development, correct?
A. I'm sure there was some other risk factor, but no matter what the risk factor is, interacting with smoking will make it worse.
Q. How many primary lung cancer patients have you seen who developed their primary lung cancer in age under 40, if any?
A. I can't recall any offhand.
Q. How many primary lung patients have you seen -- excuse me. How many primary lung cancer patients have you seen in your career?
A. Well, you know, I see them when they're hospitalized with something like when we come in with coughing up blood and they're being worked up, or they

with pain, most lung cancer is diagnosed in outpatients, not inpatients. I would probably say over my career I've had as patients a dozen people with lung cancer, but someone who is a lung cancer specialist, you know, in outpatients could see, you know, one or two a week.

Q. The number you gave me was over your entire career?

A. People who I diagnosed as inpatients with lung cancer, is that your question?

Q. Well, I understand your answer, but without regard to what my question was, let me ask it this way. How many patients with primary lung cancer have you been involved with, whether you diagnosed the cancer or somebody else did?

A. Well, I don't know because the other category of people who come in with complications have lung cancer, pneumonias, severe pain, bone involvement. I don't know, 20, 30. I'm not sure.

Q. Over your career?

A. Probably.

Q. So would you agree that you don't consider yourself a lung cancer specialist?

A. Well, I'm certainly not a clinical lung cancer specialist. I think I know a lot about smoking

and cancer in terms of the causative link, but I'm not an expert in treating lung cancer.

Q. Do you consider yourself in expert in pathogenesis in the development of lung cancer?

A. I know a fair amount about it, yes.

Q. What's an adductor?

A. An adductor?

Q. Yes.

A. Or adduct.

Q. Let's take adduct.

A. Adduct is when you have a chemical that binds in a tight way to another chemical. For example, carcinogens form adducts with DNA, and that's thought to be a mechanism by which cancer develops.

Q. In your experience, do patients frequently under-report their use of alcohol?

A. It depends. To doctors, they often do.

Q. In your experience, do patients frequently under-report to doctors their use of illicit drugs?

A. Sometimes.

Q. I said frequently. You say sometimes. Are you trying to distinguish, or are you going to agree frequently is the right answer?

A. I don't have a number. I ask patients about drugs all the time, and often people tell me about it,

especially if it's important for their care. You know, for example, on cardiology, I'm trying to figure out the cause of someone's fever, thinking about whether it's an infected heart valve, or if someone comes in with heart failure, and I want to find out is it drug related, and I tell them that, probably most

of the time they give me an accurate answer.
Q. I understand. So what you're saying is when the history of illicit drug use is important to you as a physician in trying to determine the etiology, meaning the cause of whatever problems the patient is presenting with, you're able to communicate the significance, and you believe most of the time you get correct and honest answers
A. Yes.
Q. But would you agree when that is not the reason, why the history is being taken, just being taken as part of a general social history, patients frequently, meaning more often than not, under-report their illicit drug use to their doctors?
A. I don't know the frequency of it. I don't know if it's more frequent than -- more frequent than not. I have to say it happens.
Q. It certainly isn't uncommon?
A. That's probably correct.

Q. Okay. So going back --
MS. WHITE: Oh, I got excited there for a moment.
MR. BARRON: Q. Take it easy, please. We'll finish up. Going back to this group of roughly 90 percent of regular smokers of 20 or more tobacco cigarettes, the ones that you call highly addicted. Except for those pressures few that public health people are considering some special program for, how do you, Dr. Benowitz, go about determining how much difficulty the people who fall in this category have? In other words, distinguish the severity of their problem and its effect on their difficulty in quitting.
A. Well, I've already talked about some of the things that I want to look at, but sometimes the only way you could tell is if there's been an attempt to quit. What happens when a person has tried to quit. Some of the things that are useful are some of the things I talked about. How soon did you have -- do you have your first cigarette in the day? What's your smoking pattern like? Do you smoke when you're sick? Can you not refrain from smoking for an hour or two if you're in a place where you're not supposed to smoke? Those things are helpful, but the bottom line is

always what happens what you try to quit.
Q. And concerning Ms. Whiteley, you have accepted totally without reservation or doubt that which she has presented in her deposition as to the specifics of her episode of trying to quit in approximately 1989, that time when eventually she and her husband took a trip to Yosemite; is that true?
A. Yes, but it's quite consistent with her smoking history. It's consistent with her smoking pattern. No reason to doubt that. That's the history she gave is quite a common history for highly addicted smokers.
Q. And when was the decision made by Ms. Whiteley that she was going to attempt to quit on this occasion in 1989? In other words, where was she

and what time of day was it?
A. I don't recall.
Q. When was her last cigarette smoked before the quit attempt in '89 commenced?
A. I don't recall that, either. I'd have to go back and look at the records. I don't even think I wrote that down if it's present in her deposition.
Q. You may look at your notes at any point. I don't want this to be a guessing game. I want you to have anything in your arsenal that's available to help

answer the questions.
A. I think from looking at it before, I don't think I recorded -- if it was present, I don't think I recorded that specific information.
Q. And how long after her last cigarette was smoked was it following her quit attempt she next had a puff of any disagreement?
(Food is delivered.)
MS. WHITE: Hope you guys are thirsty and hungry. I'm sorry. There's a question pending, right?
THE WITNESS: Could you restate the questions, please?
MR. BARRON: Sure.
(Record read by the reporter:
"QUESTION: And how long after her last cigarette was smoked was it following her quit attempt she next had a puff of any disagreement?")
THE WITNESS: Is the question how long did she go without a cigarette during that quit attempt? Is that the question?
MR. BARRON: Q. That's another way of phrasing it, maybe a better way.
A. As I understand it, it was two weeks.

Q. So it's your understanding that she smoked a cigarette at some point in time before the quit attempt started. Her quit attempt commenced, and she went two weeks without having a puff of a cigarette?
A. Yes.
Q. And where was she when she had her next cigarette this approximate two weeks later?
A. I don't know. She was on vacation for most of that time, I believe, but whether this cigarette relapse occurred while she was still on vacation or back at home is not apparent.
Q. What time of day was it?
A. I don't have that information.
Q. Where did she get the cigarette.
A. I don't have that information.
Q. What were her feelings at the time she had that cigarette?
A. I don't have that information.
Q. What does she believe made her -- caused her to have the next cigarette?
A. As I understand from her comments, she was just arguing all the time and just felt terrible, but why she specifically smoked the cigarette when she did smoke it, I don't know.

Q. And did she indicate that she immediately felt better?
A. That I don't know.
Q. Did she indicate the arguing immediately ceased?
A. I don't know.
Q. Did she indicate that life all of a sudden became beautiful and wonderful?
A. I don't know.
Q. If, in fact, Ms. Whiteley belongs in this approximate 90 percent category of people that you call, quote, highly addicted, can you place her in that 90 percent in terms of whether she's at the higher levels of that 90 percent, in other words, the people who have the most extreme difficulty, or she is at the lower levels of that 90 percent or anywhere in between?
A. I think she's highly addicted. I don't know how I could define that differently. I don't think she's the sort of person who could never quit smoking and would have to be on nicotine for life, but other than that, I think she's within the category of highly addicted.
Q. Is a long term user of I.V. cocaine someone who, in your view, is highly addicted to cocaine?
A. They could be. It depends on the pattern of

use. There are people who are occasional cocaine users, not usually I.V., but it can happen.
Q. That's rare that if they are I V. they're casual?
A. Right, but it --
Q. And for those who do not fit in that rare category, they are what you would call highly addicted to cocaine?
A. But also depends on the circumstances. For example, there's some discussion in the family's deposition that this guy she was living with was, you know, an I V. drug abuser and that she might have shared or he enticed her or something, some use with him. So if it was something he was doing on a regular basis because he was addicted, and then he got her to do it once or twice, then that would not necessarily mean she was addicted to it. So that's what I'm saying. It's hard to tell in this situation. If she's injecting herself up I.V., then there's a highly likelihood that she does have an addiction problem.
Q. Would you call to my attention every statement in any medical record that you've been provided that sets forth any history concerning Ms. Whiteley's I.V. drug use?
A. I don't think there's very much.

MS. WHITE: I would like to point out now who is getting the drinks, guys.
THE WITNESS: I don't really see in the medical records here, anything on intravenous drug abuse. There's some questions about it in the depositions. The one person who talks about it, Fogel

talks about it, and Leonard talks about drug use, but Fogel talks about marijuana use, and Leonard talks about alcohol abuse and multiple drug abuse, but I don't -- at least my notes don't indicate intravenous drug abuse.

MR. BARRON: Q. What is your understanding, if you have any, of the relationship of alcohol as a risk factor or contributing factor to the development of lung cancer?

A. I don't think it has a direct effect. I think it works by its association with cigarette smoking. Alcohol does clearly have an effect on esophageal cancer, on liver cancer, on other sorts of digestive tract cancers acting in combination with the cigarette smoking, but I'm not aware that alcohol is a risk factor independent of the smoking that goes along with alcohol use.

Q. Have you actually looked into it to the point that you feel comfortable running that opinion, or are

you just --

A. I've written a lot about smoking related cancer and interaction with alcohol, and I've done research on both of them, and so far as what I've read, I've never seen anything that I can recall that shows that alcohol causes lung cancer. Like I say, it's a big risk factor for esophageal cancer with smoking. But I've not seen lung cancer.

Q. Do you have an opinion concerning the benefits of the products of tobacco companies?

A. Do I think there are benefits?

Q. Do you have an opinion?

A. Yes.

Q. What is your opinion?

A. I think people could live perfectly well without having tobacco and, that there is no ultimate benefit of having tobacco around.

Q. Have you done any comparison of tobacco cigarettes made by American tobacco companies with tobacco cigarettes by companies outside the United States?

A. What sorts of comparisons.

Q. As to the health risks associated with them.

A. Not myself. I know there have been studies done with machine testing of cigarettes from different

countries in the world, and some of the cigarettes say from eastern Europe or from China tend to have much higher tar and nicotine yields. It's not been my own experiment, but I've seen studies like that.

Q. Do you know anything about any cigarettes made in India?

A. I've not seen data on them in terms of the yields.

Q. Do you know of cigarettes made in India?

A. Well, particular tobacco brands, no. There are certainly Bidis which are widely talked about nowadays, which are flavored cigarettes, unfiltered cigarettes, which come from India.

Q. Are you a fan of those?

A. Well, I've not smoked any, if that's what you

mean by a fan. I think they're of concern. They're non-filtered tobacco that can certainly have, you know, the same risks as any other kind of tobacco. They're a problem because they taste good, and so I think someone, especially when they're first starting to smoke cigarettes at a party or something, might find it much more attractive to smoke a good tasting Bidi than smoking a regular cigarette.

Q. That's what I mean. As a matter of fact, in terms of the health risk to smokers in the United

States, especially young people, they pose, in your opinion, a greater risk than American made tobacco cigarettes, correct?

MS. WHITE: That's vague and over broad.

THE WITNESS: I don't know if it's greater. Still, the thing that the vast majority of kids are smoking is a Marlboro. I mean, that's the adult cigarette, and kids smoke Marlboro, or a vast majority of them. So I don't think Bidis compete with Marlboros, but I'm still not a fan of them.

MR. BARRON: Q. But for those who smoke them, they are experiencing a greater health risk in smoking them than they would the American made tobacco cigarettes, correct?

A. Potentially, but the biggest risk is really making it easier to start smoking because if they continue to smoke those cigarettes for years, I'd say yes, that's true, but they don't. They start with those and then switch over to regular cigarettes.

MR. BARRON: Can we take 30 seconds? I think I'm done.

THE WITNESS: Great.

(Brief recess.)

MR. BARRON: Q. Speaking of Ms. Whitely, do you have a reasonable estimate as to

what number of serious quit attempts, had she made them, would have led to her being able to leave the practice of smoking entirely before she did in February of 1998?

A. Well, all I can say is on average, it takes about four, five, or six quit attempts, and so I would just have to give her that average number and say that's what I would guess.

Q. So, for example, had she made a serious quit attempt each time that she was pregnant with her child, had she, for example, recognized it wasn't a good idea for her baby, let alone herself, it would be likely that she would have been able to quit by the end of those pregnancies, correct?

A. It would be a good chance of that.

Q. Okay. What I'd like to do is mark a few of the things that haven't been marked as exhibits. We talked about the declaration that was faxed to you on October 27, 1999 from the law firm representing the plaintiff, and it was a declaration of Dr. Cline.

(DEPOSITION EXHIBIT NO. 25
WAS MARKED FOR IDENTIFICATION.)

MR. BARRON: Q. And, Doctor, you mentioned the deposition transcripts that you were

provided. You mentioned that you did not read all of

them in their entirety; is that correct?
A. Actually, I did read all of them except three, Volume I of Leslie Whiteley, because that was just so long. For that one, I looked at the indexes.
Q. So you read each of the family members' --
A. Yes.
Q. -- transcript, the four of them in their entirety?
A. Yes.
MR. BARRON: Okay. I have no further questions. Thank you.
MS. WHITE: Is that all you're marking, Gerry?
MR. BARRON: Yeah.
MS. WHITE: Okay.
EXAMINATION BY MR. BERFIELD
MR. BERFIELD: Q. Good evening, Dr. Benowitz. I'm Frank Berfield. I just have a couple of questions for you. I want to confirm something that you said about six hours ago. You will be offering no opinions concerning any contribution of asbestos to this lady's cancer --
A. That's correct.
Q. -- true? Your expert witness disclosure, has that been marked?

MR. FURR: Yes.
MR. BERFIELD: You will be offering no testimony at trial concerning any opinions regarding asbestos exposure, the allegation of asbestos exposure and its effects and synergistic effects with tobacco; is that true, sir?
A. That's correct.
MR. BERFIELD: All right. Thank you very much.
FURTHER EXAMINATION BY MR. BARRON
MR. BARRON: Q. How many cases have you consulted on involving plaintiffs who are suing one or more tobacco companies for a claim that they have a disease related to their smoking?
A. Individual cases?
Q. Yes.
A. I think this is the -- all together over time?
Q. Yes.
A. Probably half a dozen.
Q. And how many for this law firm of Wartnick, Chaber, and Harowitz?
A. This is the second.
Q. Any of the half dozen cases involved, ones in which you found that the smoker was one not highly

addicted?
A. They were all cases where the smokers were heavy smokers.
Q. You use the word "heavy." I used your word highly addicted as you've been using it throughout the deposition. Did you mean the answer in a different

way?
A. They were selected, I think, as people who were highly addicted in the beginning. Yes, they were all highly addicted, all the cases I reviewed.
MR. BARRON: That's all the questions I have. Thank you.
MR. FURR: No more questions. Thanks, Dr. Benowitz. We have been here for six and a half, maybe, except for maybe five -- I owe you for about an hour and a half. Does that sound right to you?
THE WITNESS: Yes.
MR. FURR: Okay. Great.
(The deposition was concluded at 9:01 p.m.)

NEAL L. BENOWITZ, M.D.

CERTIFICATE

I, the undersigned, a Certified Shorthand Reporter, State of California, hereby certify that the witness in the foregoing deposition was by me first duly sworn to testify to the truth, the whole truth, and nothing but the truth in the within-entitled cause; that said deposition was taken at the time and place therein stated; that the testimony of said witness was reported by me, a disinterested person, and was thereafter transcribed under my direction into typewriting; that the foregoing is a full, complete and true record of said testimony; and that the witness was given an opportunity to read and, if necessary, correct said deposition and to subscribe the same.

I further certify that I am not of counsel or attorney for either or any of the parties in the foregoing deposition and caption named, nor in any way interested in the outcome of the cause named in said caption.

Executed this 21st day of November, 1999.

LAURA AXELSEN, C.S.R. 6173